Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Company, Inc.

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Volume 66 New York, Saturday, July 11, 1925 *Number* 2

Kansas City Bus Plans Suggest New Possibilities for Service

PASSAGE of an ordinance on April 6 granting a franchise to the Kansas City Railways for the operation of buses marked the end of a long discussion. As the situation developed the railway firmly proclaimed the doctrine of unified transportation and so adapted the bus to the transportation system as a whole as not to limit its possibilities by treating it as a street car on rubber. This treatment of the bus as a distinct medium of local transportation is of utmost significance. It is to be used in a different way and on a different fare basis than the cars.

The management has laid out a system involving some 40 miles of route and will place 61 modern buses in service as rapidly as delivery can be made by the manufacturers. An express line with special equipment will connect a high-class residential section with the shopping district, clubs, hotels, apartments and the union railroad station. The fare on this line will be 25 cents. Other lines classified as through routes or feeders and crosstown lines have been located to supplement the existing street car lines.

The underlying principle of the fare structure has been to enable the new vehicles to render a distinct service of the type for which they are best suited. A minimum fare of 10 cents has been established for a bus ride, with limited transfer privileges between bus routes and also between buses and cars. On this basis, bus operation is expected by the company to have little effect on street car riding. The intention has been to avoid tearing down the existing transportation system, which gives maximum service at minimum fare. Instead, the bus system is planned to stand on its own feet and to reduce economic waste, as well as to relieve congestion and offer a suitable substitute for individual transportation.

Those who see in the new vehicle a menace to street railway investments in large communities may well study the results in Kansas City when the bus service has had a chance to become established. Those who have failed to see the possibilities of the bus in the light of unfavorable figures when it has been used as a substitute for street car service may find here the opening of a new field. When it is used under conditions which permit it to offer a real substitute for individual transportation in congested communities, the almost unlimited possibilities of the bus in city transportation may be visualized.

Greater Co-operation Needed Among Utility Men

ONE of the major problems of the electric railway industry, as outlined in Mr. Storrs' speech at the recent Bluff Point convention of the New York Electric Railway Association, was that of "obtaining greater co-operation among individual utility men for the general good of public service." At the same meeting there were two other addresses which emphasized in a very striking way different forms which this co-operation, urged by Mr. Storrs, might take. One of these papers related to co-operation between departments within an electric railway company. It was read by L. J. Davis of the Brooklyn City Railroad and has already received comment and commendation in these columns.

The second address was that by Judge William L. Ransom, general counsel for the Consolidated Gas Company of New York. It related to a condition the very existence of which is unknown to many electric railway men. This is, that under the American system of jurisprudence a legal precedent may often be established in the court or commission trial of some utility case which will seriously affect the future of all kinds of utilities. This is perhaps most easily illustrated in matters affecting valuation and rate of return. A poorly prepared case of this kind, or acceptance by a utility of a return less than that required by other utilities to attract new capital, may lead to a court or commission decision which will determine the method of valuation and the rate of return for many years for other utilities in far distant parts of the country. The situation is not limited, of course, to valuations. The principle applies also to the law of eminent domain, franchises, liability for negligence and practically all other possible kinds of utility litigation.

The situation described is more serious for the more prosperous utility companies than for those, of which there are a number, that feel grateful if they receive savings bank interest, or a little more, on the pre-war cost of their property. But it is a condition which concerns all. In a somewhat similar situation 150 years ago Benjamin Franklin epitomized the case when he said to John Hancock, "We must all hang together or assuredly we shall all hang separately." It is the duty of the national associations to devise means for bringing about the form of co-operation required.

Sale Under Foreclosure Ahead for Detroit United

GREAT disappointment is expressed by the receivers of the Detroit United Railway at the failure of the stockholders of the company to approve the plan for readjusting the finances of the company. As matters now stand there appears nothing ahead but sale under foreclosure. In that event the present stockholders will undoubtedly be wiped out. It is, of course, easy to see that a call for a payment of $40 to protect an equity which the market has recently appraised at less than $5 might appear like asking a great deal. It did not appear so to the receivers. It does not appear so to many outside observers of the affairs of the company. The stockholders thought differently. They have made their choice.

The receivers worked fast. They worked fast to put

a reasonable plan before the security holders. They worked fast to straighten out the affairs of the company on the operating side. In this respect their labors are bearing fruit. Many economies have been put into effect without detracting from the value of the service. Able engineering talent has been secured correctly to diagnose the troubles of the company. Moreover, net earnings have been sufficient to meet current interest charge. Rate advances have been secured that have not yet been reflected in the earnings of the company. On July 1, $600,000 was on hand in cash, but facing current payrolls and bills the receivers did not feel justified in applying this money to the payment of interest charges.

The next step would appear to be the formation of protective committees. Meanwhile the receivers will carry on just as they have been doing. It is, of course, out of the question to hazard a guess just how long it will be before the road emerges from receivership, but judging from work that the receivers have so far done it will not be so very long before the road is restored to the place which its advantageous position dictates it should hold. True, the stockholders have had much to dishearten them, but that does not alter the conclusion about the opportunity which exists for rehabilitating the road by the intensive application of methods upon which a start has been made by the receivers, particularly where the service to the communities is as essential as that which the Detroit United performs.

Concrete Suggestions for an Educational Program

EDWARD DANA, general manager Boston Elevated Railway, in his address "Is Educational Work Worth While?" before the recent Bluff Point meeting of the New York Association explained how his company is applying the educational principles promulgated by the American Electric Railway Association. The program last season took the form of several series of departmental group conferences. Upward of a thousand employees participated, and the interest was more than sustained to the end. In fact, regret was expressed by employees that the series had to end. Mr. Dana gave details of the program and suggested a procedure to be followed by other railways desiring to try out the plan.

One virtue of the Boston plan is that it is not inherently novel. Every progressive railway has held staff conferences from time to time. The "Elevated" has simply selected those elements of staff conferences and society meetings that have proved most valuable, has adapted to these a systematic topical program, and has injected a spirit of enthusiasm and good fellowship into the whole.

ELECTRIC RAILWAY JOURNAL hopes next season to be able to record a large number of railways as having tried the Boston plan. It must be remembered that a program of this kind is educational only in a general sense. It will furnish information and inspiration; but if it is not followed up with real study the results will prove at least partially disappointing. It provides an excellent educational stimulant; but needs to be accompanied or followed by courses requiring close application and careful thought.

The criticism most frequently made regarding programs of vocational education in fields like the electric railway is that they are not sufficiently concrete. "Tell us what to do," says the manager, "and we'll do it." The need for more and better training is recognized. How to provide or obtain it is the question. That Mr. Dana has answered. The association is to be commended for giving education a place in the list of topics selected for discussion and for securing a speaker of national reputation who is doing an unusual work in the electric railway field.

A Standard for Electrification Is Highly Desirable

PROPOSED standardization of steam railroad electrification was again brought to the fore at the recent convention of the National Electric Light Association held at San Francisco. While it was hoped that an agreement would be reached as to the type of contact line following the May meeting of the American Institute of Electrical Engineers, at which men prominent in the railroad and manufacturing fields followed Secretary Hoover in admitting the desirability of a single system, it now appears that the hopes aroused by those expressions have not been fulfilled.

One difficulty that has been pointed out is that all recent developments in the light and power field have been made with alternating current largely if not entirely at a transmission frequency of 60 cycles, whereas all of the alternating-current electrifications in this country have been made at low frequencies. The great majority, including the New Haven, the Pennsylvania, the Norfolk & Western and the Virginian systems, use 25 cycles. The present electric propulsion equipment on these and other electrified systems would not function on a frequency as high as 60 cycles. In fact, it is difficult to design satisfactory traction motors for use on that frequency.

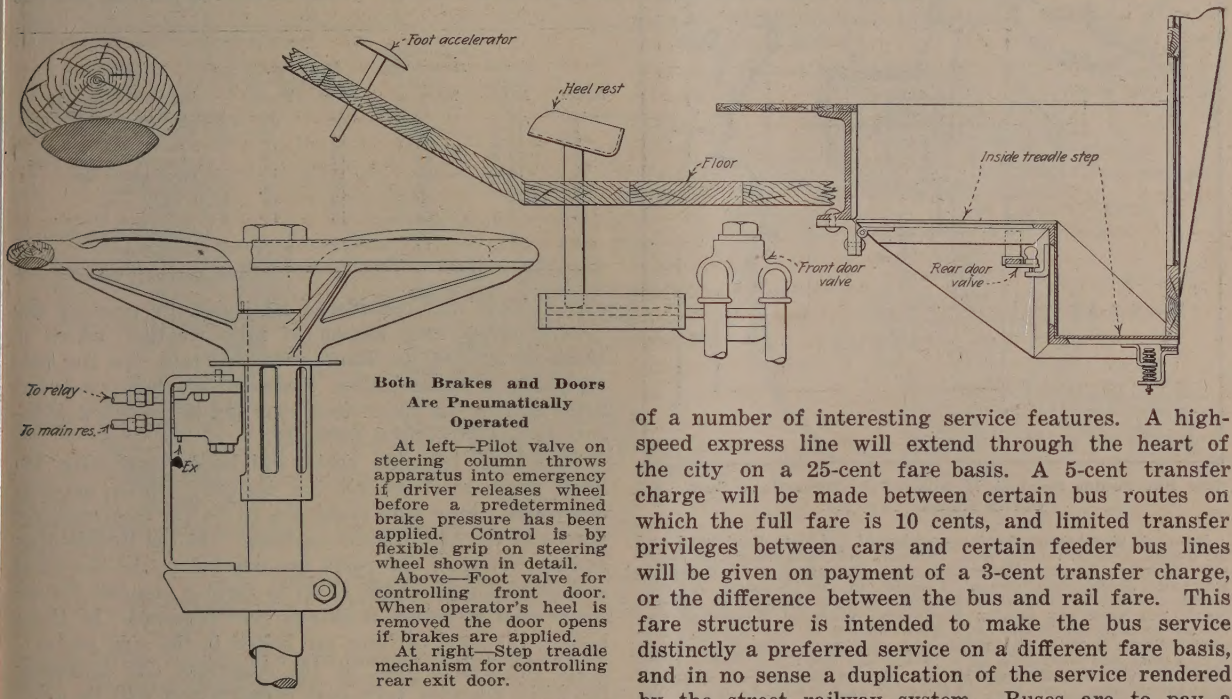
Locomotives which could operate on two or more frequencies would be difficult of design. Even the motor-generator type recently developed for the New Haven and the Detroit & Ironton systems could be made operable on both frequencies only with difficulty; in fact, this is practically an impossibility. This leaves it necessary to use some form of frequency changer to reduce the frequency to 25 cycles or thereabout if a commercial 60-cycle transmission system is to supply the power. The loss in the conversion equipment is not great, and should not overcome the other advantages of high-tension alternating current.

Despite all these apparent difficulties, it should be possible for engineers to get together and make a decision that all railroads and manufacturers can adopt as a working basis for trunk-line electrification. Each system has points of excellence; in fact, that is one of the reasons why agreement has not been reached sooner. Regardless of the decision, it is important for the progress of electrification in this country that some standard be decided on for the contact line. With such a decision made, those roads contemplating the installation of electrical equipment can do so without fear that it will be inoperable on other electrified roads. In the final analysis this is far more important than having the details of the locomotives identical. It is to be hoped that such a decision for standardization can be made in the near future so that electrification projects can go ahead with confidence.

Buses to Compete with Private Automobiles in Kansas City

Nine Routes Will Run 61 Buses to Supplement Existing Rail Lines—Fare Structure Intended to Assure High-Grade Service—Express Route with 25-Cent Fare to Operate Through Heart of City—Steering Wheel Safety Control and Steel Bodies Feature Equipment

KANSAS CITY is about to jump into the vanguard among the cities that have added buses as auxiliaries to their rail service. It is to have a comprehensive unified system of bus and rail lines under one management, and the new buses are to be operated in a manner intended best to supplement the existing facilities in various parts of the community. In each case the new service will offer a definite improvement over present facilities and will at the same time reduce to a minimum duplication and the resultant economic waste from competition between transportation agencies.



Both Brakes and Doors Are Pneumatically Operated

At left—Pilot valve on steering column throws apparatus into emergency if driver releases wheel before a predetermined brake pressure has been applied. Control is by flexible grip on steering wheel shown in detail.

Above—Foot valve for controlling front door. When operator's heel is removed the door opens if brakes are applied.

At right—Step treadle mechanism for controlling rear exit door.

As a result of careful study by Judge Kimbrough Stone of the United States District Court, Receivers Fred W. Fleming and Francis M. Wilson and the management of the Kansas City Railways, the buses will be operated as an integral part of the existing system. They will be run by trained transportation men, specially selected from the car service, who have had previous experience in the operation of automotive equipment. Approximately 100 of these men are already in training for their new work on the buses. Both transportation and mechanical supervisory staffs will be part of a unified organization.

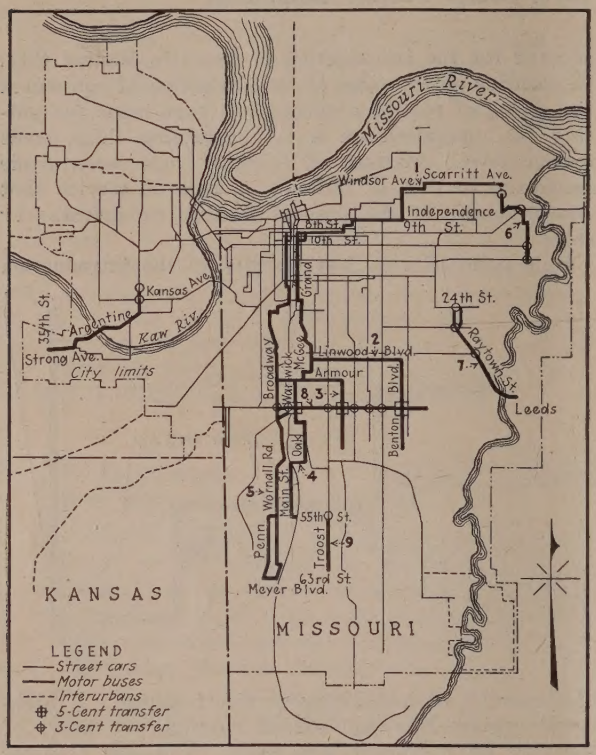
Service has been the first consideration in all plans adopted for the introduction of buses in Kansas City. In deciding on the rates of fare, selection of equipment and fixing of routes, provision has been made for putting bus operation on a self-sustaining, high-grade service level. Matters of economy have been made secondary to that of building a type of service that would appeal to the present taxicab or private car rider.

This point of view has resulted in the introduction of a number of interesting service features. A high-speed express line will extend through the heart of the city on a 25-cent fare basis. A 5-cent transfer charge will be made between certain bus routes on which the full fare is 10 cents, and limited transfer privileges between cars and certain feeder bus lines will be given on payment of a 3-cent transfer charge, or the difference between the bus and rail fare. This fare structure is intended to make the bus service distinctly a preferred service on a different fare basis, and in no sense a duplication of the service rendered by the street railway system. Buses are to pay a license fee, for the maintenance of pavements, of $75 per year for single-deck vehicles and $100 per year for double-deckers.

Under the three-year ordinance approved by the City Council on April 6, 1925, as noted in ELECTRIC RAILWAY JOURNAL for April 11, 1925, page 593, bus service will be installed on nine different routes as rapidly as equipment now on order is received. This is in addition to the Argentine feeder route in Kansas City, Kan., which has been in operation for some time with four leased buses and two newly purchased single-deck Macks. The new routes are shown on the accompanying map of the city. Of the nine new rotues, four are classed as through routes, one is an express route, and four constitute feeders or crosstown connections to existing transportation facilities.

In each case the routes have been laid out with a particular view toward the type of service which will best fit the requirements of the district to be served, taking into account existing transportation facilities available. The type of equipment to be used has also been selected with a view toward the character of the service and the physical conditions of the route. These are listed as follows:

Through Routes	Express Route	Feeder or Crosstown
(1) North East	(5) Country Club	(6) Blue Valley
(2) Linwood-Benton		(7) Leeds
(3) Armour-Paseo		(8) 39th Street
(4) Warwick		(9) South Troost



Nine Bus Routes Totaling 79 Round-Trip Miles Have Been Laid Out in Kansas City, Mo.

Route 1, starting at the intersection of Belmont Boulevard and St. Johns Avenue on the east, extends west and south via Scarritt Avenue, Benton Boulevard and Independence Avenue to Eleventh Street and Grand Avenue, in the business district. Route 2 starts at Benton Boulevard and 45th Street and extends north and west via Benton Boulevard, Linwood Boulevard and Grand Avenue, to McGee and Ninth Street in the business district. Route 3 also runs north and west from Electric Park at 47th Street and Paseo, to Main Street and the Sixth Street Trafficway, via Paseo, Armour Boulevard and Broadway. Route 4 runs almost due north from 55th Street and Brookside Boulevard, to McGee and Ninth Street, via Main, Oak and Warwick Streets.

Route 5 is an express line which runs north and south almost the entire length of the city, from the Country Club district on the south to Tenth Street and Baltimore Avenue on the north. This line's southern terminus is at Meyer Boulevard. It runs north along Wornall Road, Mill Creek Parkway and Broadway, tapping the finest residential sections of the city, as well as most of the large apartments, apartment hotels, transient hotels and clubs. It serves the downtown retail district, all the large downtown hotels and passes the Union Station.

Route 6 is a combination feeder and connecting route extending in a general north and south direction from near the end of route 1 at St. Johns Avenue and Belmont Boulevard to Fifteenth Street and Winchester Avenue. On this route it crosses the Fairmont Park car line on Ninth Street, and connects the ends of bus route 1 and the St. Johns, Twelfth Street and Fifteenth Street car lines. Route 7 extends northwest via Raytown Road, from Leeds, across the Blue River, to 24th Street and Chelsea Avenue. It taps the ends of the car lines on 24th, 27th and 31st Streets.

Route 8 is a crosstown line extending east and west along 39th Street, from Broadway to Myrtle Avenue. This crosses practically all of the important north and south transportation lines in the city. This route encounters a succession of very severe grades, as shown on the accompanying profile. Gas-electric equipment was selected to meet this service condition. Route 9 is a short feeder line extending south on Troost Avenue from the end of the car line at 55th Street to 63d Street.

Some of the principal data on service and equipment on these routes is given in the accompanying table.

In all 61 buses have been ordered for the new service. This is in addition to the two Mack single-deck buses now in service in Kansas City, Kan., on the Argentine line. In order to meet the requirements of the ordinance relative to the time for starting the new service two Mack buses will be delivered with standard wood street-car-type bodies. All of the remaining 59 buses on order will be equipped with steel bodies to be built by the American and St. Louis car companies. The St. Louis Car Company is building eighteen double-deck bodies to be mounted on Six Wheel chassis and five steel express car bodies for Six Wheel chassis. The American Car Company is building steel single-deck bodies for nineteen Yellow, six-cylinder, model Z chassis, six Yellow-General Electric gas-electric chassis, and eleven Mack chassis.

Double-deck buses will have a seating capacity of 61. The single-deck street-car types on both Yellow and Mack chassis, and on the gas-electric equipment, will seat 29. The five special express bodies for the Six Wheel buses to be used on route 5 will seat 25 passengers. Upper decks on the double-deck equipments will be

Route	Round Trip, Miles	Approximate Round-Trip Time, Minutes	Headway, Minutes Base	Headway, Minutes Rush	Type of Equipment
1	10	72	12	12	Yellow model Z single deck
2	11.2	84	12	12	Six Wheel double deck
3	12.2	84	12	12	Six Wheel double deck
4	12.6	90	10	9	Yellow model Z single deck
5	14.2	60	15	15	Six Wheel parlor cars
6	4.2	30	10	8	Mack single deck
7	5	30	15	10	Mack single deck
8	7.6	60	10	10	Yellow-General Electric gas-electric single deck
9	2	15	12	7½	Mack single deck

open. This was considered advisable in view of the comparatively long season of mild weather which is characteristic of the Kansas City climate. In the construction of these bodies, however, provision is being made so that an upper-deck roof can be installed without serious structural difficulty.

Structural tee side posts will be covered with 18-gage sheet steel on all the bodies. On single-deck equipment these side posts are to be run continuously across at the top to form carlines. On the double-deck bodies, however, the posts are carried up to the hand rail on the upper deck, so as to form a support for an upper roof structure if this is ever required. In these bodies, the steel carlines are bolted to the side posts.

On the bodies built by the American Car Company the Brill Schecter type post construction will be used, and the sash will be wood frames reinforced with brass channels on the stiles. The lower deck of the double-deck bodies will be fitted with brass sash. The express bodies will have plate-glass sedan-type windows.

Floor plans for both single and double-deck bodies are shown in accompanying illustrations. A distinctive feature of both is the use of the automatic rear exit door and the arrangement for allowing the double-deckers to be operated by one man. Other distinctive features of the double-deck buses include an interior square rear stairway 22 in. wide, with a door arranged so that the upper deck can be shut off in winter. To facilitate one-man operation of the double deckers when this is desirable, they are to be equipped with periscopes to give the operator a view of the upper deck, and with megaphones or loud speakers.

Interior finish of all of the bodies will be in mahogany faced Haskelite. This same material will also be used for headlinings. The express bus bodies will have a special padded roof construction consisting of heavy sound-deadening material stretched over the top of the headlining and held in place with wire mesh and then covered with roofing canvas. These bodies will be painted a dark royal blue color with gold striping and lettering. They will be equipped with blue-striped mohair seats of twin form-fit construction and deep, automotive type cushions. Blue silk curtains will be used at the windows, and there will be mirrors on each side post. The floor will be covered with ¼-in. thick rubber tiling, on top of which horse-hair carpet will be laid. Interior illumination will be furnished with twelve Electric Service Supply Company "Ivanhoe" dome lights. In addition there will be frosted lamps recessed in fixtures on each side post so as to give a similar effect to that in a Pullman car.

All the other single and double-deck bodies will be painted a battleship gray below and above the window line. The intermediate space will be painted with a continuous band of cream extending the entire length of the body, and including both rear and front doors. This painting scheme is intended to accentuate stream lines and to give the buses a long, rakish appearance.

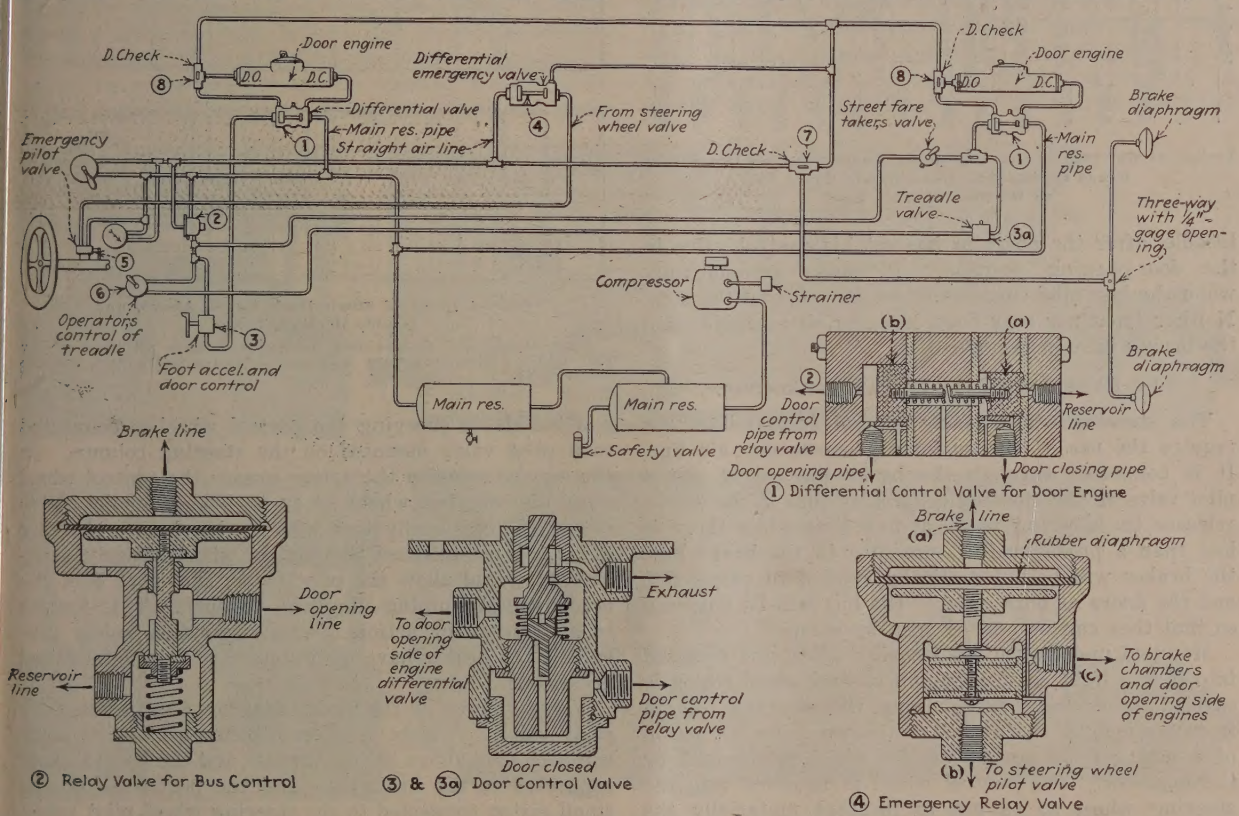
Lower-deck seats will be upholstered in dark green mohair plush. Green Pantasote roll curtains will be provided at the windows, and the floor will be covered with green and red mosaic rubber tile. Illumination will be similar to that in the express buses except that the post lights will be omitted. Hunter illuminated combination destination and route signs will be used on the various types of equipment.

All of the buses will be equipped with the new steering wheel safety control developed in the Kansas City Railways shop under the direction of R. W. Bailey, superintendent of power and equipment. They will be provided with Westinghouse automotive air brakes, with diaphragm-type hand-operated brake valves. Westinghouse brake diaphragms are specified for this equipment except on the double-deck and express buses. On these, Christensen double-acting brake cylinders will be used. Air supply will be from a direct-connected Westinghouse 6-cu.ft. compressor, gear or chain driven from the engine timing gears.

The steering wheel safety control is designed to give full protection to passengers in the event of the driver becoming incapacitated while the bus is in service. In addition it requires the operator to retain a secure grip of the wheel while the bus is running along with the brakes released. Its development was based on the principle that the steering wheel is the critical point of control for a vehicle operating along the highway, and that the safety of passengers is dependent on the operator retaining a secure hold of the steering wheel.

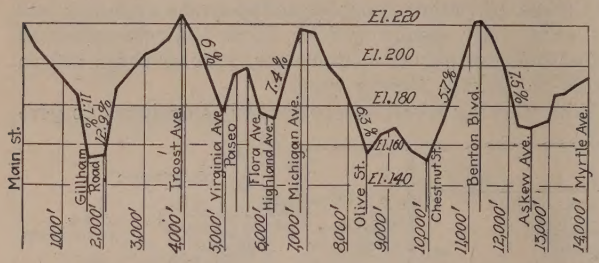
This safety control is also tied in with pneumatic operation of both front and rear doors. With schedule speeds limited by the rate of acceleration and safe maximum speeds, every effort was made to take advantage of the possibility for speeding up service by reducing the time of passenger interchange at each stop. The circulating principle of loading passengers at the front and unloading them at the rear was considered to be the best arrangement for handling passengers rapidly, and the automatic rear exit door was therefore provided.

The air-brake valve is hand operated. It was con-



Piping Diagram of Steering Wheel Safety Control for Kansas City Buses
Details of valves show construction of differential control valve 1, relay valve 2, door control valves 3 and 3*a*, and emergency relay valve 4, shown at corresponding points in piping diagram

sidered that this arrangement would make possible a smoother stop than if a foot-operated valve were used. In addition it allows the bus to be held on a grade with the air brakes. On the other hand, the pneumatic control for the front door is foot operated, so as to avoid the time delay experienced in opening the door when its control is through the brake valve. The rear door is opened when a passenger steps on a floor



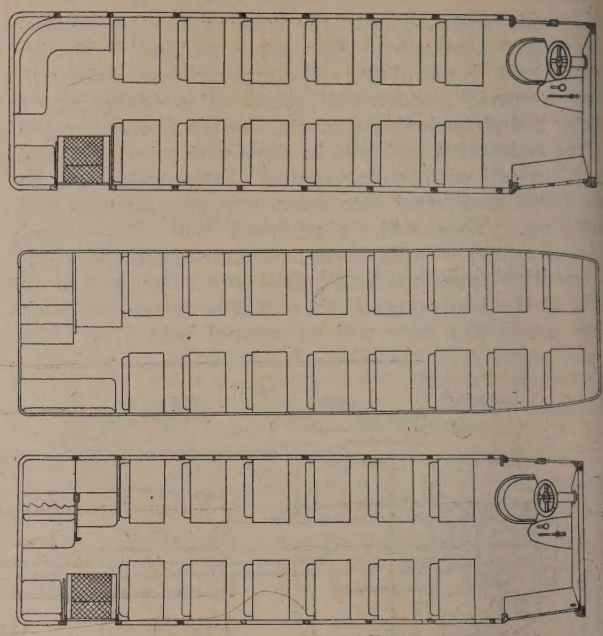
Profile of the 39th Street Crosstown Route Showing the Severe Grade Conditions. Gas-Electric Buses Are to Be Used on This Line

treadle, after the operator has set his control valve in the door-opening position. It closes automatically when the last alighting passenger has cleared the step. Neither front nor rear door, however, is operable until the brakes have been applied.

No Emergency Line in Safety Control

The steering wheel safety control system does not require the use of the customary emergency air line. It is connected through the brake line itself and a pilot valve on the steering column, so that if the driver releases the steering wheel at any time when there is less than a predetermined pressure in the brake line, the brakes will be automatically applied in emergency and the doors at both ends of the bus will be balanced so that they can be pushed open by hand.

Mounted underneath the steering wheel and recessed into it is a light cast aluminum control wheel which is carried on a sleeve surrounding the steering column in such a manner that it will drop down under the action of a compression spring, if the wheel is released by the operator. The control wheel is recessed into the steering wheel so as not to increase materially the diameter of the hand-grip on the wheel. At its lower



Seating Plans of Single-Deck Buses, Above, and Double-Deckers, Below

Both single and double-deck bodies will have automatic rear exit doors. Single-deckers will seat 29 passengers and double-deckers 61.

end the sleeve carrying the control wheel is connected to a pilot valve mounted on the steering column. In the service position the driver grasps the control wheel with his steering wheel so as to hold the pilot valve closed. This is easily done with one hand while shifting gears. If he released the control wheel entirely, however, it would allow the pilot valve, shown at 5 in the accompanying piping diagram, to open. This results in an emergency action of the apparatus, unless previously the brakes have been applied to a predetermined pressure.

Valve 4 shown in the piping diagram is an emergency relay valve. This is in effect a differential valve with the port at *a*, above the diaphragm and the large piston, connected to the brake line and the port *b* below the small piston connected to the steering wheel pilot valve. The side port *c* is connected to the brake chambers

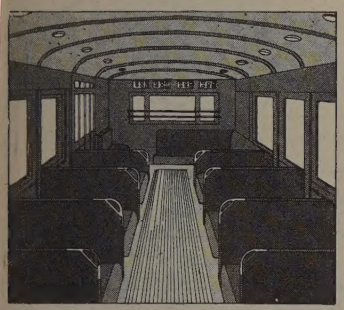
GENERAL SPECIFICATIONS OF 61 BUSES TO BE USED BY KANSAS CITY RAILWAYS

Number of buses	18	5	19	6	11	2
Date purchased	June	June	June	June	June	June
Date delivery	September-October	September	August-September	August-September	August-September	August-September
Builder of chassis	Six Wheel Company	Six Wheel Company	Yellow Coach Co.	Yellow Coach Co.	Mack	Mack
Model	14 HDD	14 HPC	Z	Gas-electric	59-AB	59-AB
Builder of body	St. Louis Car Co.	St. Louis Car Co.	American Car Co.	American Car Co.	American Car Co.	Mack standard
Type	Steel double deck	Steel parlor car	Steel street car	Steel street car	Steel street car	Wood street car type body
Seating capacity	61	25	29	29	29	29
Wheelbase	234 in.	255 in.	230 in.	230 in.	230½ in.	230½ in.
Brakes	Westinghouse air	Westinghouse air	Westinghouse air	Westinghouse air	Westinghouse air	Westinghouse air
Builder engine	Continental	Continental	Yellow	Yellow	Mack	Mack
Bore and stroke	4½x5½—6 cyl.	4½x5½—6 cyl.	4½x5½—6 cyl.	4½x5½—6 cyl.	4½x5—4 cyl.	4½x5—4 cyl.
Engine starter	North East	North East	North East	North East	North East	North East
Ignition	North East battery	North East battery	North East battery	North East battery	North East battery	North East battery
Lubrication	Force feed	Force feed	Force feed	Force feed	Force feed	Force feed
Buzzers (12 per bus)	Faraday	Faraday	Faraday	Faraday	Faraday	
Destination signs	Hunter	Hunter	Hunter	Hunter	Hunter	
Heaters	Exhaust	Exhaust	Exhaust	Exhaust	Exhaust	
Headlining	Haskelite	Haskelite	Haskelite	Haskelite	Haskelite	
Interior lighting	Twelve dome lights	Twelve dome lights	Twelve dome lights	Twelve dome lights	Twelve dome lights	
Floor mats	Rubber tile	Rubber tile and horse-hair carpet	Rubber tile	Rubber tile	Rubber tile	
Upholstery	Mohair	Mohair	Mohair	Mohair	Mohair	
Interior finish	Mahogany	Mahogany	Mahogany	Mahogany	Mahogany	
Shock absorbers	Gruss air	Gruss air	Gruss air	Gruss air	Gruss air	
Door controls	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic	
Air compressor	Westinghouse 6-ft.	Westinghouse 6-ft.	Westinghouse 6-ft.	Westinghouse 6-ft.	Westinghouse 6-ft.	
Battery	Exide—285 amp.-hr.	Exide—285 amp.-hr.	Exide—285 amp.-hr.	Exide—285 amp.-hr.	Exide—285 amp.-hr.	
Rear signs	Right—left—stop	Right—left—stop	Right—left—stop	Right—left—stop	Right—left—stop	
Miscellaneous	Periscope and megaphone					

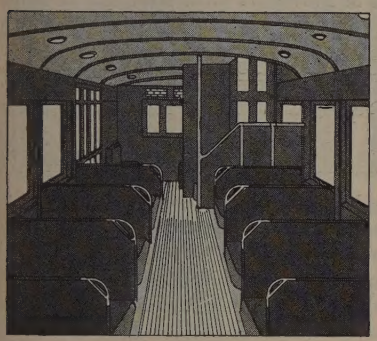
through the double check valve 7 and to the door-opening side of both front and rear door engines, through the double check valves 8. Relay valve 4 is designed so that it requires a predetermined pressure on the large piston to overcome reservoir pressure on the small piston and spring at the bottom. If the steering wheel pilot valve is opened by releasing the safety control grip wheel before the predetermined pressure has been applied in the brake line, the piston in valve 4 moves up and admits reservoir pressure direct to the brake chambers and to the door-opening side of both door engines. This gives an emergency brake application and balances both doors so that they can be pushed open by hand. Once the brakes have been applied in emergency, the system may be returned to normal position by picking up the steering wheel control or by applying air to the brake line through the operator's brake valve. Either operation brings the apparatus out of emergency left in its housing under the action of reservoir pressure on the small right-hand piston *a*. This admits reservoir air to the door-closing pipe and holds the door engines in the closed position.

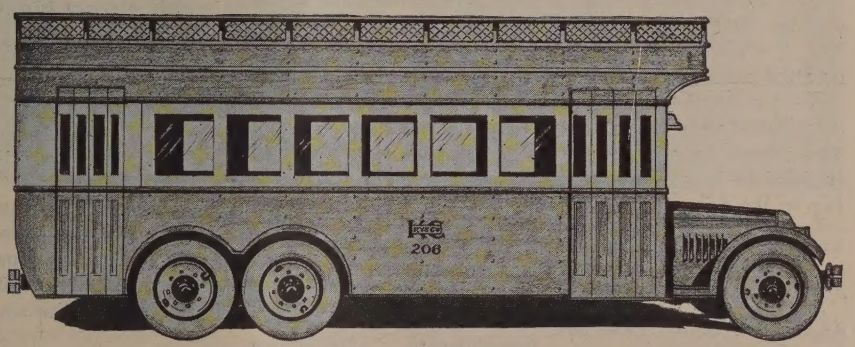
When a predetermined pressure has been admitted to the brake line, the relay valve 2 admits reservoir pressure to the door-control system and to the large end of the differential valve 1. The pressure on the large end of the differential piston *b* in the differential valve overcomes the pressure on the smaller piston *a* and moves both pistons to the right into position as shown in the cross-section 1. Thus reservoir air is admitted to the door-opening side of the engines and the door-closing side is vented to atmosphere.

An operator's foot-controlled door valve is in series with the door-opening line from the relay valve 2 to the differential valve 1 on the front door engine. A similar valve 3*a* is connected directly from the relay



Interiors Are Made Attractive
Single and double-deck buses will be finished in mahogany, with rubber tile floors and green plush seats.





Exterior Appearance of Single-Deck and Double-Deck Buses
Both have been designed to obtain an attractive, rakish appearance. The double-deck bus, shown below, can be operated by one man, a periscope being installed to give a view of the upper deck.

position and permits the doors again to be normally operated through the driver's valve and the rear door treadle.

Air for opening the door engines is taken through a relay valve, shown at 2 in the diagram, from the reservoir line. This relay valve permits the door-opening pipes to be charged only when the predetermined minimum pressure has been admitted to the brake line. Thus there is no air in the door-opening pipes except when the brakes are applied. This reduces leakage in the door piping and also prevents the doors from being opened when the brakes are released.

The doors are held in the closed position by directly connecting the engines to the reservoir line through the differential valves shown at 1 in the piping diagram. A cross-section of one of these valves is shown in the door-opening position, in an enlarged sectional view. In the normal, or door-closed position, the differential piston shown in this valve is pushed to the valve 2 to the differential valve 1 on the rear door engine. Valve 3*a* is controlled by the rear door treadle similarly to the way in which the front door valve 3 is controlled by the operator's foot. This treadle control of valve 3*a* is shown in the accompanying section through the treadle mechanism. For both the front and rear doors, the line is closed when the pins in valves 3 or 3*a* are pushed in and is opened to allow air to pass to the engines when the pin is released. Thus the front door is opened when the operator removes his foot from valve 3 and the rear door is opened when the pin in valve 3*a* is released by a passenger stepping on the treadle. In series with valve 3*a*, however, is the small hand valve 6, which must be opened by the operator before air can be admitted to the rear door engine by operation of the treadle. Valve 6 returns to the closed position automatically when the brakes are released.

In addition to the door controls described, street fare

collector's valves are to be installed for the rear doors on all types of buses except parlor cars, and a conductor's valve is to be arranged on the rear platform of the double-deckers.

There will be a foot-operated mechanical emergency brake on each type of bus. A hand brake lever is to be connected in parallel with the foot lever, so that it can be locked in position if desired. On the double-deck and express buses the mechanical brakes are internal expanding on the rear axle. On the single-deck chassis the mechanical brake is on the drive shaft.

General specifications for each type of bus are given in an accompanying tabulation.

Rerouting Speeds Up Chicago Cars

CHECKS conducted by the transportation bureau of the Department of Public Service, city of Chicago, to determine the effect of the general rerouting of surface cars in the business district, as described in ELECTRIC RAILWAY JOURNAL of May 3, 1924, page 683, and November 15, 1924, page 843, show in a striking manner the improvement which resulted. As was previously pointed out at the time this change was put into effect, the routes of approximately 1,600 cars on 35 different lines were shifted in one night. A total of 5,847 right-hand turns, 5,381 left-hand turns and 988 stub-terminal movements were done away with.

The effect of this change, after it had been in service long enough to be tried out properly, is shown by the figures in the accompanying table. They indicate that the average speed of all cars through the Chicago Loop district has been increased from 4.72 m.p.h. to 5.28 m.p.h., or approximately 11.9 per cent.

Subsequent to the rerouting, safety zones have been established on some of the principal streets in the Loop. These have been gradually extended, and have resulted in further improvements in traffic movement. According to the figures of the Department of Public Service, establishment of safety zones on State Street, the principal shopping thoroughfare, increased the speed of northbound cars on this street in the Loop district from 3.66 m.p.h. to 5.50 m.p.h., or an increase of approximately 50 per cent.

Data collected and compiled by the Department of Public Service covering operation between 12:30 and 5:30 p.m. on a typical weekday are given in the accompanying table.

SUMMARY OF CHECKS OF ELAPSED TIME IN THE CHICAGO LOOP DISTRICT

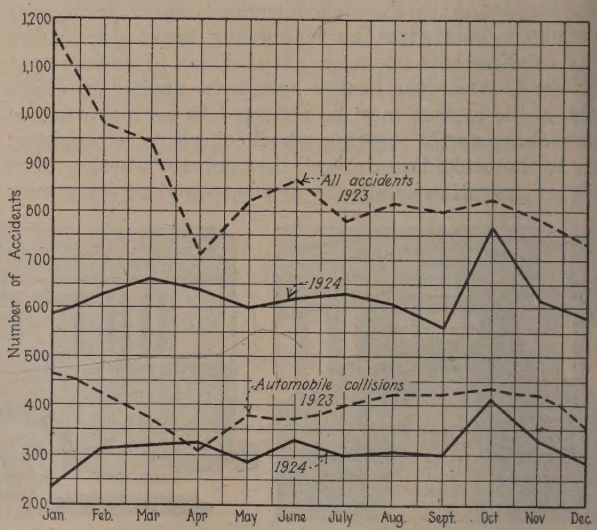
All checks were made between 12:30 and 5:30 p.m. to determine effect of the rerouting upon the speed of street cars.

Lines	Before Rerouting No. of Cars	Before Rerouting Speed, M.P.H.	After Rerouting No. of Cars	After Rerouting Speed, M.P.H.
Elston Avenue	67	5.19	65	6.20
Division Street	53	5.18	59	6.53
Ogden Avenue	54	4.15	74	5.67
Milwaukee-Armitage	115	5.59	187	5.81
(Short Loop)	41	4.98	...	...
Madison Street	118	3.98	134	5.07
Lincoln-Wells	36	5.54	111	5.91
Wells Street, Northbound	82	6.49	142	5.61
State Street, Northbound	134	3.43	158	3.66
State Street, Southbound	158	5.98	132	6.02
State-Dearborn loop	167	3.99	183	4.99
Clark Street, Northbound	102	4.08	219	4.50
Clark Street, Southbound	106	4.15	211	4.81
Van Buren Street	148	4.84	153	5.79
Harrison-Adams	87	4.72	84	4.89
Total cars	1,468	....	1,912	....
Average speed in Loop district	.....	4.72	.....	5.28

Note:—Since the installation of safety zones on State Street the average speed of cars operating northbound on this street has been increased from 3.66 m.p.h. to 5.50 m.p.h.

Accidents Reduced 26.7 per Cent at Providence

RECORDS of accidents on the United Electric Railways, Providence, R. I., show a reduction for 1924 of 26.7 per cent from the 1923 figures. Automobile collisions were reduced 21.5 per cent in the face of a 16 per cent increase in the number of such vehicles registered in the state. In only one month was there an increase in the number of such accidents. Comparative figures for several classifications of accidents are given in the accompanying table. The total number of accidents and the number of auto collisions are shown by months in the accompanying illustration.



Monthly Accident Records at Providence Show Reduction in 1924

	Collisions: Car and Automobile	Collisions: Car and Car	Collisions: Car and Team	Collisions: Car and Bicycle	Derailments	Pedestrians Injured	Pedestrians Killed	Total
1923	4,808	154	293	45	444	175	15	10,248
1924	3,761	86	216	25	267	122	9	7,507
Decrease	1,047	68	77	20	177	53	6	2,741
Per cent decrease	21.5	44.1	26.2	44.5	39.8	30.2	40.0	26.7

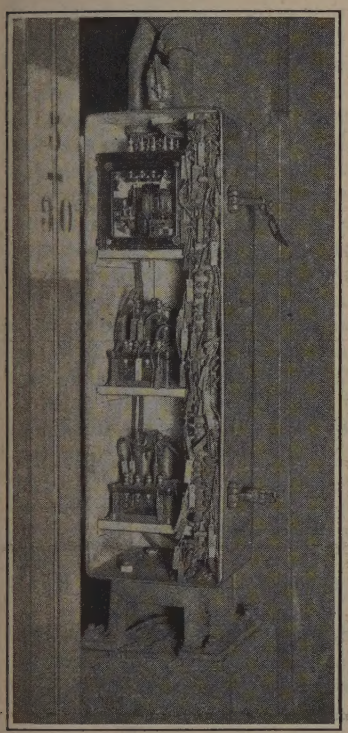
Adequate Car Service Helps Suburban Expansion

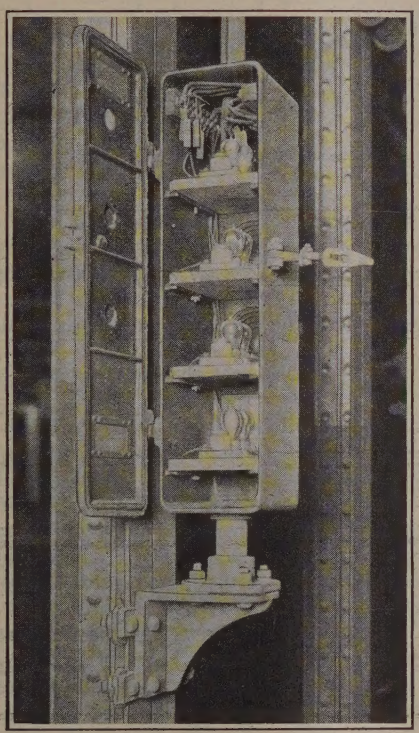
HOW the value of real estate generally depends to a large extent on local transportation facilities is shown in advertisements recently published in Los Angeles papers. An article from the real estate section of the *Illustrated Daily News* showed several photographs of the new City Terrace district, grouped around a drawing of a street car, on which the fare—5 cents—is prominently displayed. Advertising matter stressed the value of a "quick 5-cent car line." Maps were reproduced showing how easily the new district can be reached by street car; and the prospective buyer is enjoined to "Follow the Quick, Easy Road to City Terrace Today."

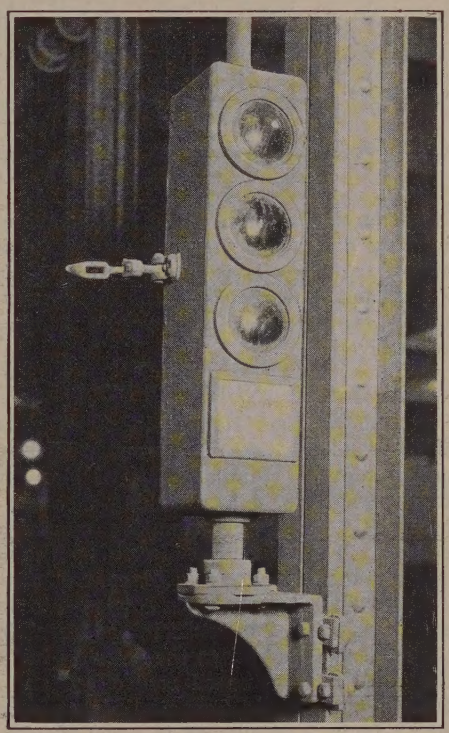
The public relations department of the Los Angeles Railway makes a point of notifying promptly the owners of subdivisions when car service changes or additions are made that will benefit their territory, thereby providing excellent advertising matter of value to deflect attention to the advantageous location of the lots for sale. The result is that street car service is popularized and increased patronage is secured.

Speed Control in Interborough Subway

By Means of a Perfected Signal System with Timing Relays in the Underground Lines in New York Express Trains on the Same Track Are Allowed to Approach More Closely to Each Other at Station Stops—This Has Decreased the Train Headway







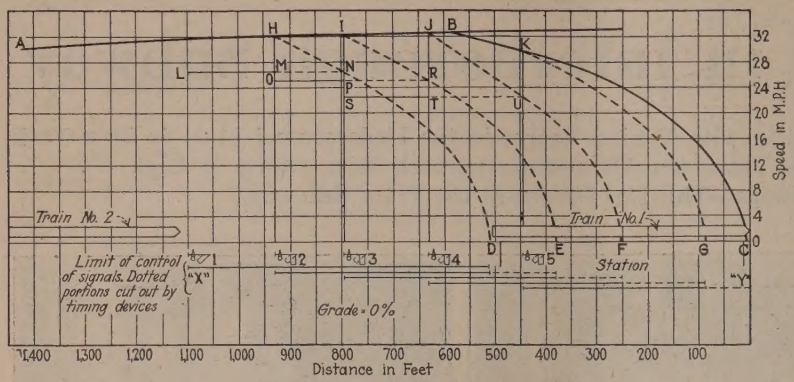
The First View Shows the Case with Time-Element Relay at Top and Signal Control Relays Below as Installed at Times Square Station. The Second and Third Views Are of a Light Signal, with Case Open and Closed, at the Station at 33d Street and Seventh Avenue

BY A SYSTEM of speed control for subway express trains as they are entering a station, the Interborough Rapid Transit Company in New York has been able to cut down its possible minimum operating headway between ten-car trains to about one minute 45 seconds. This reduction in headway is the summation of a number of improvements, by which the minimum operating headway has been reduced from two minutes 30 seconds, that in use in the year 1909. In other words, by various changes, principally in the signal system, a reduction in minimum operating headway of 40 per cent has been secured. This corresponds to an increase in possible number of trains per hour of approximately 24 to approximately 34, or a gain in subway carrying capacity of about 40 per cent.

The latest improvement in the block signal system reduces to an actual minimum the time from the start of one train from the station to the stopping of the following train in the station. It is accomplished by making the allowable distance between these trains a factor of the speed of the moving rear train. In other words, if the rear train slackens its speed as it approaches a station, it is allowed to approach nearer the train ahead which is standing at the station platform. Then, as the forward train moves out of its berth, the signals at the entering end of the station are cleared sooner, due to the reduced speed and braking distance of the rear train. This allows the rear train to speed up, if necessary, before it makes its stop.

The system will be more clearly understood from the accompanying diagram, in which the horizontal scale is distance in feet, and the vertical scale speed in miles per hour. Each of the signals, 1, 2, 3, 4 and 5, is observed by the train as it approaches an express station. Each of these signals has an automatic stop or trip, which will apply the brakes of the approaching train if the motorman attempts to run by a danger signal. Train No. 1 is considered as being in the station discharging and receiving passengers and train No. 2 is the following train. The control of each signal is such that it will not clear until the next signal in advance (when at danger) has a protective braking distance from that danger signal to the rear end of train No. 1 ahead.

In the diagram, the line *A-B-K-C* represents the maximum speed distance curve obtainable for a train operating with the conditions prevailing in the subway and on a 0 per cent grade. The portion of this line marked *B-K-C* represents the speeds and distances required in case the train used its service brakes to come to a stop in the station. The dotted curve line *H-N-D* represents speeds and distances for emergency braking of the train from maximum speed shown, to a stop for signal No. 2. Hence, the location of signal



This Chart Shows the Saving in Time at Stations Through the Use of the Speed Control Signal System

No. 2 is at that point which will provide for a proper braking distance of train No. 2 away from the rear end of train No. 1, as shown. Similarly, curves *I-R-E*, *J-U-F* and *K-G* represent the emergency braking distance as calculated for signals Nos. 3, 4 and 5 respectively.

CLOSING-IN SYSTEM

It follows that signal No. 2 will not clear until there is at least braking distance ahead of signal No. 3 or to point *E*. Similarly, signal No. 3 will not clear until signal No. 4 has braking distance ahead, or to point *F*. The same condition applies to the other signals. This is shown clearly by the lines *X* to *Y*, which indicate the limits of control of these signals. This method of cutting the station into sections, which allows train No. 2 to "close in" as train No. 1 is leaving the station, is known as the "closing in" system. It is the basis of the "speed control system" used on the Interborough Rapid Transit lines at express stops, by which train 2 is allowed to come even closer to train 1, when the latter is standing in or moving out of the station, but only when train 2 has reduced its speed to that which is safe for each signal location.

This result is accomplished by means of time relays, which are operated from the track circuit between the signals. For example, if train No. 2, while passing between signal No. 1 and signal No. 2, has reduced its speed sufficiently and has consumed the necessary time between these signals, the time relay makes contact and the signal clears. It is then possible for train No. 2 to move forward to the next signal, and this, in turn, will be cleared through another time relay if a further reduction in speed of train No. 2 is made.

Another reference to the sketch will make this situation clear. As train No. 2 enters the track section between signal No. 1 and signal No. 2, signal No. 2 is at danger. As signal No. 2 is to be cleared by a reduction in speed of the train, the next step is to determine if the speed for which the braking distance protection from the rear end of train No. 1 (or point *D*) to signal No. 3 has been calculated is adequate. To do this, it is necessary to trace back the emergency braking distance curve *D-N-H* to the point at which it intersects a perpendicular line, drawn from the position of signal No. 3. This perpendicular is found to intersect the braking curve *D-N-H* at the point *N*, and from the vertical scale, the equivalent speed of the point *N* is found to be 26.4 m.p.h. This, then, is the maximum allowable speed of train No. 2 at signal No. 3 to protect train No. 1 and signal No. 2, as represented by the solid line *L-M*. Therefore, if train No. 2 has reduced its speed between signal No. 1 and signal No. 2 to at least that speed, it can safely move forward to signal No. 3, and that is the speed for which signal No. 3 provides protection.

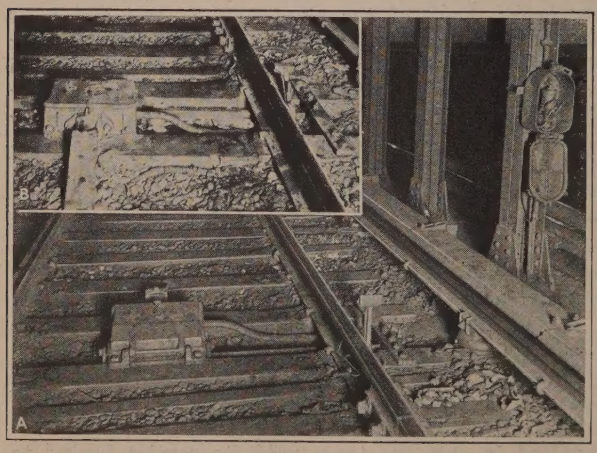
To apply the time relays to this situation, the distance between signal No. 1 and signal No. 2 is divided by the allowable average speed in feet per second to obtain the time setting of the timing relay.

PRINCIPLE APPLIED TO LATER SIGNALS ALSO

Similarly, the lines *O-P* and *S-T* represent the allowable average speeds at which the train must speed between signal No. 2 and signal No. 3 and between signal No. 3 and signal No. 4 to have signal No. 3 and signal No. 4 respectively cleared. However, signal No. 3 and signal No. 4 do not clear over the timing relays until train No. 1 has started from the station. This condition is shown by the signal control lines *X-Y*. The solid portions of these lines represent the signal controls when the timing relays operate. The dotted portions of these lines represent those portions of the signal control which are cut out by the timing relays when operating. In other words, the total line represents the closing in control, without the later improvement known as speed control.

In some cases it is necessary to cut back the control of signal No. 5 at the point marked *G* in order to save three or four seconds on each train movement. This is done when train No. 1 exceeds a certain average speed, while the rear end of this train is traveling between *F* and *G*. This is possible because even if train No. 1 should be accidentally tripped, i.e., its brakes applied at this average speed, the rear end of the train will clear the station at the point *C* as the distance *G—C* is less than the emergency braking distance.

With the speed control system, therefore, it will be noticed that it is possible to have two trains moving in unison, one moving into the station and the other



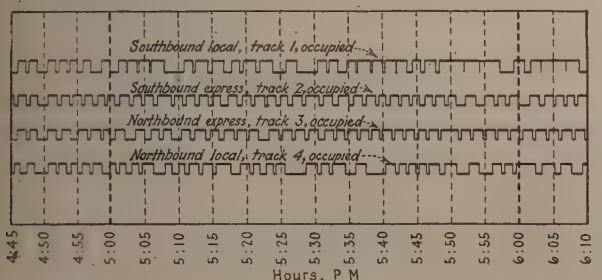
Automatic Trip at North End of Station at 33d Street and Seventh Avenue. The Upper View Shows the Stop at Clear Position. The Lower View Shows the Trip in Operating Position, and at the Right, the Stop Release Box at Which the Trip Can Be Cleared

moving out of a station, and to have these trains operate as closely to each other as is possible with safety. In this case, it will be seen that the movement of the following train (train No. 2) is controlled both by its own speed and by the position of train No. 1.

Notable Results Obtained

Theoretically, it would be possible, with the rates of acceleration and braking used on the Interborough trains, to obtain with this system a headway of one minute 30 seconds for ten-car train operation and a 30-second station stop. While obviously this station stop cannot be maintained in practice due to congestion, observations made of train operation northbound at Times Square station during the rush hour show very notable results. The accompanying table gives a series of observations made at Times Square on Tuesday, March 24, 1925.

A graphical record of train headways is also presented. This was taken by a train interval recorder for the four tracks at Times Square on Monday, April 13, 1925, between 4:45 p.m. and 6:10 p.m. In this record



This Is a Chart of Headways and Length of Station Stops Automatically Recorded During the Rush Period at Times Square Station, from 4:45 P.M. to 6:10 P.M., on Monday, April 13, 1925

the four lines, reading downward, represent respectively the southbound local, southbound express, northbound express and northbound local. In the record for each track the lengths of the upper horizontal lines indicate the lengths in time of station stops and the lengths of the lower horizontal lines the interval between trains.

Time-Element Relay

The time-element relay used is of the disk vane type of the Union Switch & Signal Company and is known as style SV-20. It can be set to provide time intervals of about three to fifteen seconds or from five to 25 seconds. This relay is shown in three accompanying illustrations. Briefly, the operation is as follows: The operating element is an aluminum disk, capable of revolving between two electrical coils when electrical energy of at least 85 per cent of the normal operating voltage (55 volts) is supplied to these coils. This aluminum disk makes 3½ revolutions in moving from its de-energized to its full stroke position. During these revolutions, its motion is transmitted to a countershaft carrying a 90 deg. gear segment, the teeth of which engage a pinion on the shaft of the disk. This pinion is connected to the disk shaft through a flexible clutch.

The retarding mechanism for this time relay is connected to the shaft of this segment through a link equipped with a tension spring, which is fastened at one end to a jaw on the segmental gear shaft and at the other end to a pawl which drives the retarding

15+00 14+00 13+00 12+00 11+00 10+00 9+00 8+00 7+00 6+00

Track "M" "A" Northbound express track No.3 "B" "C"

12 Rc 12 Rc Times Square station North

Signal 12 Rc Clears	Head End Passes "A"	Train Stops in Station	Train Starts from Station	Rear End Passes "C"	Headway at "A"	Sig. 12Rc Clears Until Head End Passes Sig. 12 Rc	Head End at Sig. 12Rc to Head End at "A"	Head End at "A" to Stop in Station	Station Stop	Start from Sta. Until Rear end Passes C	Start from Sta. of Preceding Train Until Head End Passes "A"
5:18:26	5:18:46	5:19:09	5:20:06	5:20:35	1:43	:16	:04	:23	:57	:29	:37
*	5:20:45	5:21:16	5:21:59	5:22:28	1:59			:31	:43	:29	:39
5:22:18	5:22:33	5:22:56	5:23:36	5:24:04	1:48	:10	:05	:23	:40	:28	:34
5:23:44	5:24:00	5:24:31	5:25:13	5:25:41	1:27	:07	:09	:31	:42	:28	:24
5:25:25	5:25:43	5:26:13	5:26:58	5:27:27	1:43	:05	:13	:30	:45	:29	:30
5:27:06	5:27:25	5:27:53	5:28:35	5:29:03	1:42	:05	:14	:28	:42	:28	:27
5:28:42	5:29:01	5:29:29	5:30:11	5:30:39	1:36	:06	:13	:28	:42	:28	:26
5:30:26	5:30:43	5:31:08	5:31:57	5:32:25	1:42	:06	:11	:25	:49	:28	:32
5:32:04	5:32:21	5:32:50	5:33:40	5:34:09	1:38	:05	:12	:29	:50	:29	:24
5:33:50	5:34:12	5:34:40	5:35:28	5:35:57	1:51	:09	:13	:28	:48	:29	:32

* From track M

Table Showing Headways, Etc., of Northbound Express Trains, Times Square Station, Between 5:18 P.M. and 5:34 P.M. on Tuesday, March 24, 1925

device. The purpose of the tension spring on the connecting link is to supply a uniform driving force, irrespective of that developed by the operating magnets. This flexible link drives a train of gears whose motion is retarded by another and smaller aluminum disk which rotates in the field of two permanent magnets. These gears with their vane supply the time element of the device.

The length of the stroke of the gear segment, and consequently the time element of the relay, is regulated by a screw stop. When this stop is reached contacts in the back of the relay are open while those in the front of the relay are closed. The electro magnets operating the large aluminum disk are controlled through the back contact of a track relay; where this track section is unoccupied the operating magnets of the time relay become de-energized, and the gear segment falls by gravity to its original position, carrying with it contacts and all connected parts.

Number of Relays Used

The number of these relays and signals used at the different stations and the spacing of the signals vary according to circumstances, as does also the time setting of the relays. Most of the relays are set at from three seconds to fifteen seconds, though in some cases the

Relay Lockers in Switch Tower North of 33d Street Station, Seventh Avenue Line

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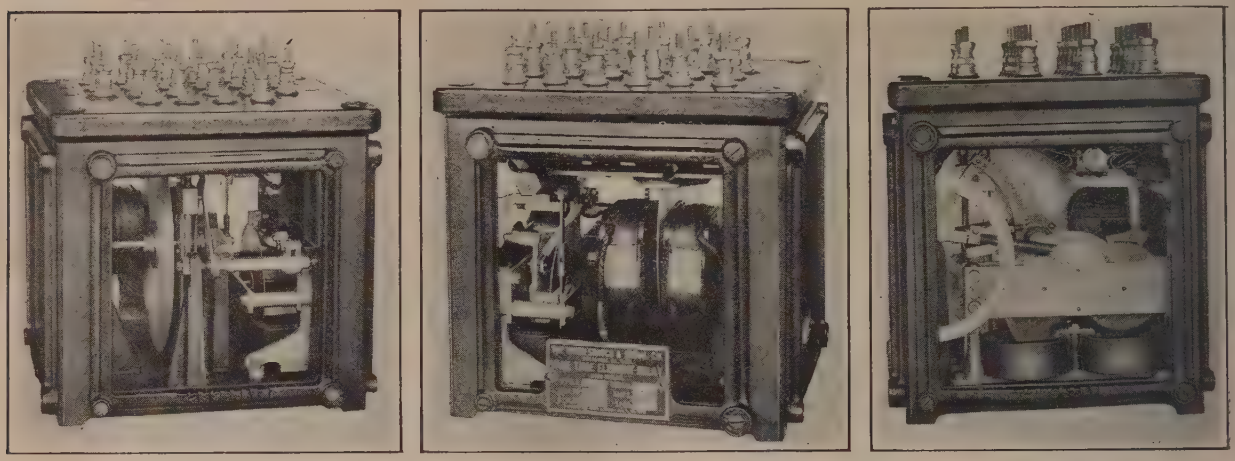


Three Views of the Time-Element Vane Relay Used in the Speed Control System

setting is as much as 30 seconds. This period is obtained by a slight modification of the time relay, as this relay normally can be set only up to fifteen seconds.

The block signal system of the Interborough Rapid Transit Company operates at 25 cycles alternating current. The voltage used in the main feeders is 550. This is stepped down to 55 volts for the signal lights and to 10 volts for the track circuit.

Operating Conditions

Motormen are instructed to approach all danger signals, trains ahead, junctions and terminals with the train under full control and to operate at specified speeds.

The maximum rate of speed permitted on straight track is 45 m.p.h. and on curves to as low as 9 m.p.h. This means that trains on curves continue at the specified speed until the last car has left the curve.

In approaching junction points and terminals, the brakes are tested at least 500 ft. in advance of the junction point or terminal and the speed reduced so that a light application of the brakes will bring the train to a proper stop.

North Shore Line Meets Emergency

Realigns Route Into Milwaukee in Record Time to Be Ready for July 4 Rush of Traffic—Entire Job Completed in 24 Days

AN IMPORTANT realignment of a portion of its tracks in the city of Milwaukee, Wis., has just been completed by the Chicago, North Shore & Milwaukee Railroad.

The growth of traffic on this railroad has been phenomenal. Its regular equipment is sufficient to meet the everyday requirements, but on holidays and special occasions there are not enough cars to meet the peak-load demands.

Owing to the existence of two sharp curves at Madison and Grove Streets and at Madison and First Avenue, in the heart of Milwaukee, cars of the Chicago Rapid Transit Company could not be operated into the Milwaukee terminal. On the Rapid Transit Company lines the traffic is light on Sundays and holidays. Instead of buying new cars, the North Shore Line decided to purchase a right-of-way through a city block in Milwaukee, eliminate the sharp curves and make possible the operation of the steel cars of the Rapid Transit Company.

The ordinance authorizing the company to lay tracks was passed by the Milwaukee City Council on May 25. It was signed by Mayor Hoan on June 2. Work was started immediately. To make way for the tracks it was necessary to wreck or remove nine buildings. The buildings were wrecked, the necessary grading done, the new tracks laid and the line opened for traffic on the night of June 26, just 24 days after the signing of the ordinance.

This remarkable construction record was made possible through the co-operation of the Lorain Steel Company, the Milwaukee Electric Railway & Light Company, the city administration of Milwaukee and Henry Danischefsky, the contractor.

The maximum curvature through the new alignment is 20 deg., the tracks being laid with 102-lb. Lorain Steel and 100-lb. A.R.E.A. section through open track on private right-of-way.

The work was rushed so as to have the new tracks ready for operation before the July 4 week-end traffic. On Decoration Day the traffic carried on the line was so heavy that it almost swamped the company to handle it, and the officials decided they would not be caught unprepared the next holiday. A number of the new steel cars of the Rapid Transit Company were fitted with movable toilets in the shops of the company to make the cars suitable for interurban operation.

As a result of this arrangement the North Shore Line will have a reserve of equipment to draw from at any time, while the Rapid Transit Company will profit by the rental received for cars which otherwise would be out of service.

Statistics on Strikes

MANY statistics on strikes, their causes, number, employees involved, etc., are published in the June issue of the *Monthly Labor Review*, published by the United States Bureau of Labor. The following is a list of the number of street railway strikes for the past nine years as given in that publication: 1916, 56; 1917, 118; 1918, 117; 1919, 110; 1920, 81; 1921, 12; 1922, 19; 1923, 21; 1924, 14.

Semi-Outdoor Construction Is Used at St. George Substation to Protect Apparatus Against Material Falling from Nearby Viaduct

Supervisory System Supplements Automatic Substation Control

Power Distribution on the Recently Electrified Lines of the Staten Island Rapid Transit Railway Is Regulated by a Single Operator—Many Protective Devices Have Been Installed—Large Overload Capacity Is Provided

By C. A. Butcher
General Engineer Westinghouse Electric & Manufacturing Company

PRIMARY power for the operation of the electric divisions of the Staten Island Rapid Transit Railway, New York City, is supplied from the Livingston station of the Staten Island Edison Corporation at 33,000 volts, three phase, 60 cycles. Two circuits connect the power station and each of the five substations. Four of the latter are full automatic, while the fifth is semi-automatic. A complete system of supervisory control places the regulation of the entire power system in the hands of a traffic operator, located at St. George, who is continuously and automatically advised of the status of the power system. A general description of this electrification was published in ELECTRIC RAILWAY JOURNAL July 4, page 3.

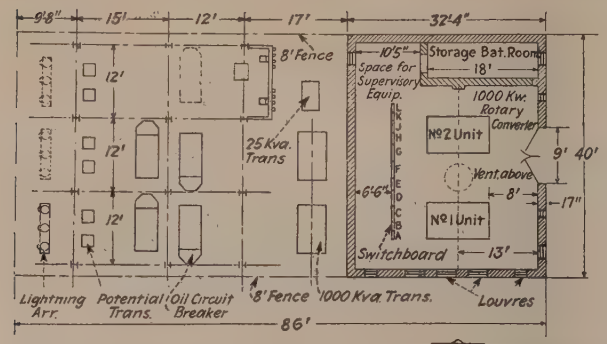
The five substations have an aggregate capacity of 10,000 kw., distributed as follows:

Location	Number of Synchronous Converter Units	Capacity, Kilowatts
St. George	Three 1,000-kw.	3,000
South Beach	Two 1,000-kw.	2,000
Old Town	Two 1,000-kw.	2,000
Eltingville	Two 1,000-kw.	2,000
Atlantic	One 1,000-kw.	1,000

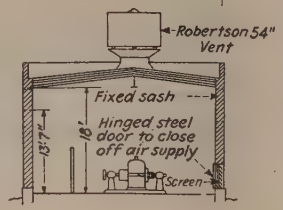
Each of these substations, with the exception of the one at St. George, will be automatically operated, while the St. George substation will be equipped for semi-automatic operation.

To determine the proper locations and capacities of substations sheets were prepared showing graphically the operation of all trains according to the present and estimated future schedules. Based on the number of units per train, weight per unit, schedule speed, etc., the momentary energy required for starting and the energy required for free running were calculated. Detail loads were then calculated for each mile of track for each minute during the peak period. An economic study was made to determine the load losses in the distribution system, based on a number of different substation spacings. The arrangement given above was then decided upon.

In order to check these calculations the complete system was set up on a miniature network in which proportional loads, voltages and resistance values were used. From this setup, it was determined that the 1,000-kw., shunt-wound synchronous converter was best suited for this installation. The inherent drooping voltage characteristic of the shunt-wound converter when supplied from power transformers having 8 per cent inherent impedance was simulated by a series resistor. Under various schemes of loading, based on locations of trains at different times during the peak load, and average load conditions, the voltage at trains and the substation loads were determined. It was also determined that the operation of the system is protected against the failure of any converting unit in any of the five substations. A test showed that a concentrated load equivalent to 300 per cent rating of the units in operation in either Old Town or Eltingville substation,



Legend for switchboard: *A* and *B*, d.c. feeder; *C* and *D*, d.c. end of No. 1 unit; *E* and *F*, d.c. end of No. 2 unit; *G*, relays for No. 1 unit; *H*, meters and relays for No. 1 machine, *J*, relays for No. 2 unit; *K*, battery charging control; *L*, watt-hour demand meters.



Plan and Elevation of South Beach Substation

when placed at a point directly in front of the substation, would receive 80 per cent of its energy from that substation and 20 per cent from the adjacent stations, dividing 10 per cent to the station on each side. This shifting of load is effected by the drooping voltage characteristic of the equipment only. Similar tests showed conditions of operation incident to various assumed combinations of substations and train operations.

Substation equipment of both the railway and the Staten Island Edison Corporation has been installed at the St. George and Eltingville locations. At Clifton Junction, the power company has erected an outdoor, 33,000-volt, double-bus structure from which one circuit runs underground to St. George. Two circuits run overhead, providing a parallel radial supply to the South Beach substation. A fourth circuit overhead from this station runs through the Old Town substation and connects to the bus at Eltingville, thus completing a loop which includes St. George, Clifton Junction, Old Town and Eltingville. A double overhead circuit extends from Eltingville to the Atlantic substation.

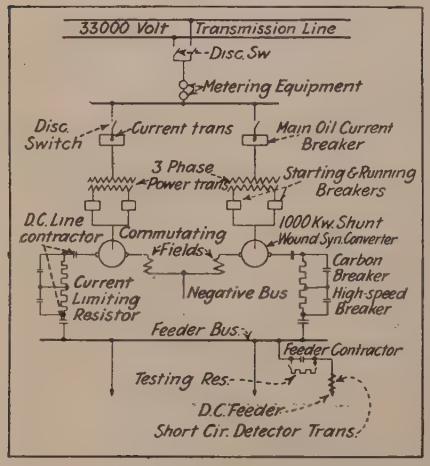
The St. George substation is located adjacent to the terminal yards in a position which brings the roof of the building almost on the level of a viaduct over the tracks. Semi-outdoor construction for accommodation of the 33,000-volt switching equipment was used to prevent exposure of the high-voltage equipment to the public thoroughfare. The portion of the building occupied by the railway provides space for four synchronous converters together with necessary transformers and switching equipment, although only three have been installed. The transformers and the high-tension switching equipment are installed in a structure, open to the weather on three sides.

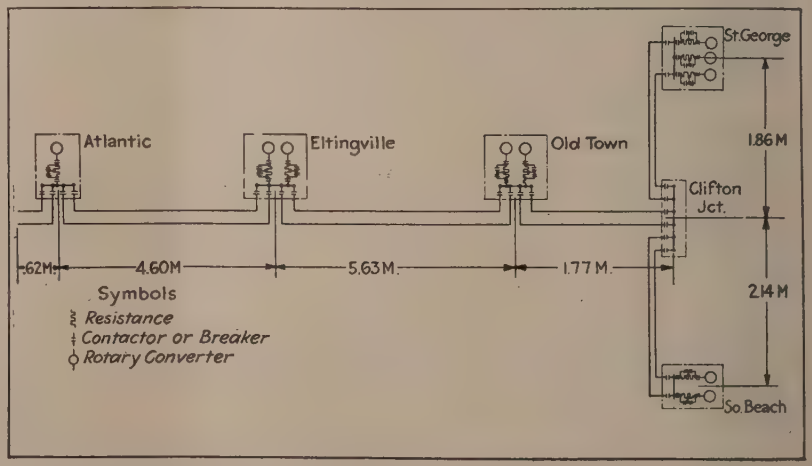
Secondary leads from the transformers run through conduit laid under the substation floor to the rings of the converters, and to the manually operated starting switches mounted on panels adjacent to each machine. On the starting panel is mounted also the converter shunt field control switch, a polarity indicator and a control switch for the high-tension oil circuit breaker. With the exception of the manual starting equipment the switching equipment is automatic in its operation.

Except for slight variations in arrangement, the substation installations at South Beach, Old Town, Eltingville and Atlantic are similar. The Atlantic substation is at present equipped with only one converter unit. However, provision has been made for the second, so that when it is installed the station will be practically a duplicate of the three other automatic stations. At each of the other automatic substations the installation comprises an outdoor structure, which accommodates two power transformers, signal transformer and switching equipment, the high-tension switching equipment, lightning arresters and outdoor metering equipment, and a brick building, housing two 1,000-kw., 60-cycle, shunt-wound synchronous converters together with the automatic switching equipment.

Power transformers are installed on concrete foundations adjacent to the substation wall. Secondary leads enter the building through porcelain wall bushings and are racked to the inside wall down to the alternating-current starting and running switches and to the conduit running under the floor.

Starting switches are direct current, solenoid operated, and are mounted adjacent to the wall where the transformer leads enter the building. They are grouped in pairs behind and at the ends of the automatic switchboard. Above the switchboard are two 3,000-amp., high-speed, direct-current circuit breakers, one at each end of the switchboard, and between these





D.C. Distribution System and Single-Line Diagram of a Two-Unit Substation

the grid frame resistors for automatic adjustment of overload conditions.

Ventilation is provided by large louver openings on three sides of the building at the floor line and a 54-in. Robertson type ventilator centered over the machine room and extending well above the roof line. A long narrow room at one side of the building, opening into the machine room, contains the storage batteries for the operation of the substation and supervisory control equipment.

In general, the automatic features are similar to those of other automatic substations installed by the same manufacturer. Control is by means of contact-making voltage relays which start and stop the converters and place them on and off the line as required.

To protect the machine from damage due to the short circuits between the third rail and running rail a 3,000-amp., full automatic, electrically operated high-speed circuit breaker is connected in the machine circuit between the machine and the direct-current feeder bus. Should an abrupt rise of current in excess occur, this breaker, which operates to limit the current in about 0.005 second, opens to insert into the circuit a resistor which limits to a safe value the amount of current supplied to the fault. When such a condition arises, an impulse coil in the third-rail feeder circuit on which the short circuit occurs will function to open the circuit breaker on that feeder and thus disconnect it from the substation bus. This impulse coil functions only on an abrupt rise in current such as that incident to a short circuit and will not operate on any legitimate overload conditions. As soon as the feeder breaker opens, the current is reduced to normal and the high-speed circuit breaker and the resistor shunting breaker close to again restore full voltage to all feeder sections except the one on which the trouble occurs.

Each third-rail feeder circuit is so arranged that, as soon as the feeder breaker opens, a testing circuit, which comprises essentially a high resistance circuit and a voltage relay, is connected to the circuit. As soon as the short circuit is removed, the voltage relay transmits an impulse to the closing relays which operate to reclose the feeder breaker and re-establish the power circuit to that section.

At Old Town, Eltingville and Atlantic substations each third rail is sectionalized at a point immediately in front of the substation. Each section is supplied through an automatic service-restoring feeder equipment, a duplicate of that described above, thus making a total of four feeder circuit panels at each station. The South Beach substation is located at the end of the line and therefore only two feeder circuit equipments are required. At Clifton Junction the third rail is also sectionalized in all three directions. In a small station erected at this point there has been installed a tie-bus, to which each of the six sections is connected through automatic service-restoring switching equipment, duplicating that used in the substations.

Interior Arrangement of Semi-Automatic Substation at St. George. Three 1,000-Kw. Converters Have Been Installed

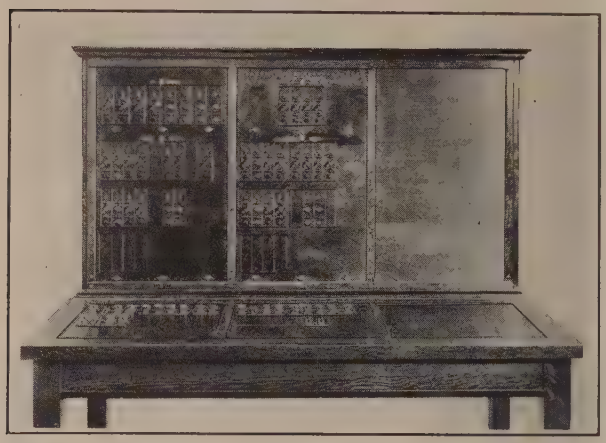
In each case the feeder circuit breaker is electrically operated from energy supplied by a storage battery. Only a shunt trip mechanism, for opening the mechanical latch to effect the opening of the breaker, is provided. These are unlike similar circuit breakers used in manually operated railway substations since the automatic overload trip has been omitted. The shunt trip mechanism operates from energy supplied by the storage battery through the contacts of the relay operated in turn from the impulse coil or short circuit detector. Should the feeder cable heat excessively a thermostat operates to open the feeder circuit breaker, which in this case remains open until the thermostat is reset by an inspector. Since the breakers are mechan-

ically latched and operated from an independent source of energy, their operation, unlike those in most automatic substations, is entirely independent of the substation bus voltage.

Bringing the Second Unit Into Service

Following a rise in temperature of the machine windings, at a predetermined point the second converting unit is put into service in parallel with the first in exactly the same sequence of operation as that set into operation by the voltage relay in starting the first machine. If the first unit be subjected to such overload as to cause the load-shifting resistor to be cut into the circuit, the second unit would be automatically started after a brief time delay and in advance of any indication by the temperature relay previously referred to. The two units, operating in parallel, function with reference to the load in identically the same manner as a single unit.

Since the synchronous converters used in these stations are capable of delivering 50 per cent overload for two hours after reaching a constant temperature at full load, and are also capable of operating at 300 per cent of rating momentarily, the acceleration and normal operation of trains during the non-rush hours will require the operation of only one unit in each substation. Therefore, only during periods of peak load will the operation of the second unit in any of the stations be required.



Control Desk Used by the Traffic Operator

A complete supervisory control system has been installed. From a central point located in the traffic operative office at St. George substation, four wires constituting two pairs of a telephone cable radiate to each of the four automatic substations. This cable is paper-insulated for 1,500 volts between conductors and, as a whole, for 3,500 volts to ground, thus rendering it safe from break-down due to induced voltages from the high-voltage circuits which it parallels along the railroad right-of-way between substations. Care has been exercised to prevent the grounding of any of the circuits, including those in the same cable, which are used for telephone and telegraph. Also, special vacuum tube high-voltage arresters have been provided for installation at each substation.

The equipment, which is of the synchronous relay type, provides on the traffic operator's control desk a control key and indicating lamps for each device in each station for which supervisory control has been installed. Controlled by these lamps and keys are groups of small multi-contact control relays mounted apart from the desk in a steel cabinet. A similar installation has been made at each substation, although in this case the small relays are controlled by the operation of those at the dispatcher's station. Through their contacts they energize or de-energize auxiliary relays, which in turn cause the devices in the substations to function in response to the operations at the control desk, initiated by the dispatcher.

By means of this system, the traffic operator may open or close any of the main power circuits either on the primary side of the power transformers or on the supply from the direct-current bus to the third-rail sections. Also, he is able to start or stop any of the machines in the automatic stations. In addition to control over breakers at various points on the system, through which power is supplied to the signal system, he also has an indication of the position of oil circuit breakers on the 33,000-volt system, which are operated by the power company. Should the supervisory system, for any reason, fail to function, the stations remain under full automatic control. In addition to features which insure against faulty operation of the supervisory system, alarm circuits are provided to indicate open fuses, open circuits and short circuits on the line wires.

The railway substation equipment and the switching equipment installed in the generating station and substations of the power company were supplied by the Westinghouse Electric & Manufacturing Company. Engineering and installation of the power company's equipment were by the J. G. White Engineering & Management Corporation. Engineering on the railway substations was under the direction of J. H. Davis, chief engineer of electric traction, and J. S. Hagan, special engineer, both of the Baltimore & Ohio Railroad, of which the Staten Island Rapid Transit Railway is a subsidiary.

Installation of the railway substation equipment was made by the Westinghouse Electric & Manufacturing Company under the direction of H. D. Macy.

R. B. White, general manager of the New York terminal lines of the Baltimore & Ohio Railroad, is in charge of operation of the Staten Island Rapid Transit Railway.

Letting Street Cars Solve Parking Problem at Poughkeepsie

FREE rides downtown on the trolley are being given by the Poughkeepsie & Wappingers Falls Railway, Poughkeepsie, N. Y., to automobile drivers who park their machines on a plot of ground belonging to the company. This land is on the outskirts of the city, across the street from the railway carhouse. Formerly it was used for car storage. Tracks have been taken up and the old cars scrapped. A large sign has been erected reading:

"Park Here and Ride Free on Trolley to Destination —25 cents. Let Street Cars Solve Your Parking Problem."

Not only does the railway secure revenue from the use of the land, and also from the automobile drivers who return on the cars to the parking space, but an additional benefit results from the lessened congestion downtown.

The Readers' Forum

Rewarding Efficiency in Utility Management

FRESNO, CAL., June 10, 1925.

To the Editor:

Regulatory authorities may dictate the character of the service to be supplied by a public utility, the value of the property for rate-making purposes, a just and reasonable return to which the investment is entitled, and rates that may be charged for such service, but they cannot make the management of a property efficient when the ability or inclination for such operation is lacking. Observing that some inefficiently operated utilities were allowed increases in rates upon a showing of high operating expenses and insufficient revenues, a number of other managements of utilities have concentrated their efforts upon showing a similar condition in order to substantiate a request for increased rates for service or to prevent a reduction in such advanced rates. The feeling has become widespread that because commissions have the authority to fix rates for service, pass upon the issue of securities and other similar matters and at the same time cannot cause the property to be confiscated by not allowing such revenues as will provide a reasonable return upon the investment, the necessity of real business management on the part of the utilities has ceased to exist. This feeling is substantiated to a considerable extent by the orders handed down frequently by the commissions.

The primary function of a public utility regulatory body is to protect the public from exploitation. At the same time the organizations supplying public services must be allowed to earn a reasonable profit. In ordinary business considerable competition usually exists so that regulation by the public is unnecessary.

Mercantile houses have found, through years of experience, that special sales at which standard goods are sold for a short period at reduced prices are well supported by the buying public and that the larger turnover at a lesser profit per sale results in greater total profits. Chain stores have enjoyed an extensive growth due to the desire on the part of the public to save money. If the chain stores or the merchants who resort to special sales enjoy greater profits than those merchants who do not follow such practices the matter is apparently not of interest to the public. Neither does the public seem to worry whether its money goes away from the community, as is the case with the chain stores, or whether it stays at home, as is the case when spent with the local merchants. All of this leads one to believe that what the public is most interested in is in obtaining its desires at the lowest price available regardless of the extent of the profits of those who supply them.

It would appear that the regulatory bodies could profit by that factor of human nature and outline a policy that would create a desire on the part of utility managements to operate their properties at the highest efficiency possible. The only policy by which that result could be started or maintained is one which rewarded efficient management and penalized inefficient management.

Every commission which has been in existence any length of time has records of valuations for rate-making purposes of practically all utilities over which it has jurisdiction. They have also established a reasonable return for each class of utility. They have information as to what rates should be justifiable in each community for each service if the properties were reasonably well managed. Using such information as a basis, a policy could be established that when such reasonable rates are in effect the utilities would be entitled to earn as much as the reasonable return established by the commission for that particular type of utility. Then if the management was able to increase its operating efficiency and reduce rates a proportionate increase in the allowable earnings would be permitted. If it became necessary to ask for an increase in rates such an increase, if granted, would automatically reduce the rate of return which would be considered reasonable.

As an example, consider an electric utility. The rate of return established by the regulating commission for that type of utility is, let us say, 7 per cent. The reasonable base rate for residence lighting service in that community is, perhaps, 9 cents per kilowatt-hour. Should this utility be able, by more efficient management, to reduce the above rate to 8 cents per kilowatt-hour it would be allowed to earn up to as much as 7½ per cent on its investment. In other words, 7½ per cent would be considered a reasonable return under such conditions. On the other hand, if the management felt it necessary to request the commission for permission to increase its rate to 10 cents per kilowatt-hour such request, if granted, would be accompanied with the stipulation that, under such conditions, a reasonable return on the investment would be 6½ per cent instead of 7 per cent. In other words, the return on the investment which is "reasonable" would depend entirely on the degree of proficiency evidenced by the managements of the various utilities. Under such a policy efficient management, on the one hand, would be rewarded directly and, on the other hand, inefficient management would be penalized directly.

E. E. BULLARD.

White Egg Indicates Front-Entrance Car

Method of Marking One-Man Front-Entrance Cars of the Boston & Worcester Street Railway

RECENTLY the Boston & Worcester Street Railway inaugurated one-man service on a number of its branch lines. In order that prospective passengers might readily distinguish the front-entrance one-man cars from those of the rear-entrance two-man type the company has painted "white eggs" on the side panels. These bear in black the inscription "Please have exact fare ready." In addition the center panels of the front doors have been painted white and carry the legend, "Enter by front door." At the same time a safety notice reading "Please watch your step" has been stenciled between the step and the platform door.

London County Council's System Defended

THE tramways owned by the City of London not only pay but are a great boon to the population, says J. M. Gatti, chairman of the London County Council finance committee. A summary of his remarks, with British values changed to American, follows:

"Before people say that the street railways have become obsolete and that they have obvious disadvantages, it would be best to find some other method of transportation that will carry the increasing population. Our cars carry 700,000,000 passengers a year, and on the Victoria Embankment during the rush periods they carry 36,000 an hour. If we abolished the street cars the streets would not be wide enough to hold the number of omnibuses required to carry the same number of passengers.

"The debt incurred in the building of the County Council street car system was $65,000,000, and of that amount we have repaid nearly $40,000,000. Besides, we have paid $13,000,000 of the amount expended for laying tracks. That is pure gain.

"I am not trying to gloss over the fact that unless some method is devised to increase the earning capacity of our system, its development must be seriously hampered. There has been a slight improvement in earnings during the last year, but more people must use the street cars. It is one of the most disturbing factors in the whole situation that, after so many years of operation, the street railway system has not obtained more of the good will of the traveling public and the taxpayers.

"There has been no increase in the street car fares; in fact, the omnibuses were forced to reduce their fares to the level of the County Council system. In some districts the car fare is still 25 per cent lower than the bus fares. This difference represents a saving of $5,000,000 annually to the public. Also by maintaining the paving adjacent to the tracks and by paying for the use of the streets, the car systems reduced local taxation by many thousands of dollars."

In conclusion Mr. Gatti appealed to Londoners to support their own transportation system. If so, he said, they could make it as successful as that of Glasgow's.

Association News & Discussions

Is Educational Work Worth While?*

By Edward Dana
General Manager Boston Elevated Railway

EDUCATION, as understood today, is daily, constant learning. The arms and legs may stop growing, but the brain has continuous capacity for development through education. The electric railway industry is interested in this subject because, through education, it is possible for its thousands of employees to cope with the difficulties involved in the modern intensive specialization present in electric railway work.

Subordinate electric railway officials must be given an opportunity to secure all the information possible with regard to the work they have in hand. Further, they must be encouraged and trained to think for themselves, to develop their own plans of action and to carry out these plans. It is a major duty of enginers and executives to supply such information to subordinates as will enable them to produce the best possible results.

These facts are behind the educational work of the American Electric Railway Association, of whose educational committee, for four years, I have been chairman. This work is not intended to compete with that of existing educational institutions, but rather to assist electric railways in acquainting their employees with the fundamentals of electric railroading and helping them to fit themselves for greater responsibilities. The committee on education has issued annual reports and other material which is available to all electric railways.

Applying Educational Principles on Boston "L"

Some of the principles which the American Association committee has been endeavoring to promulgate have been illustrated during the past three winter seasons on the Boston Elevated Railway.

In 1922-23 we had a course in practical electricity conducted by the division of university extension of the Massachusetts Department of Education. The following winter, the program was enlarged to include, also, dynamo-electric machinery and public utility economics. At the end of each season a dinner was given to those who had completed the courses, and prominent educators, as well as the chairman of the board of trustees of the Elevated, addressed the men.

During 1924-25 we had more than a thousand employees enrolled in departmental group conferences and a general series of conferences for women. The departments represented were: Maintenance, rolling stock and shops, power and transportation. †There were also three general inspirational meetings, with prominent speakers and entertainment features.

Our experience clearly demonstrates that the personnel of a large electric railway appreciates opportunities such as this. The enthusiasm displayed was the outstanding feature. While in a way this program was experimental, the outcome indicated great possibilities for the future and placed a responsibility upon the management for the continuation of work of this character.

The following table indicates the interest taken in the group conference plan:

Group	Total Enrollment	Average Attendance	Certificates Awarded*
Women	78	37	32
Power	137†	54	112†
Rolling-stock and shops	216	107	100
Maintenance	218	147	139
Transportation	437	233	214
Totals	1,086	578	597

*They were given to all who attended 60 per cent of the conferences.

†These numbers cover two courses, each of ten lectures, one covering mechanical engineering, the other electrical engineering.

Two benefits, at least, accrue from such conferences: (1) The opportunity, at not too great sacrifice of time, for men and women engaged in industry to secure vital information, which in turn will give them an opportunity better to grope their way and disclose their aptitudes. (2) The opportunity, which of necessity follows from closer association of those engaged in the same industry, to know each other in a more intimate way and to appreciate

*Abstract of address at the annual meeting of the New York Electric Railway Association, Bluff Point, New York, June 26-27, 1925.

†The topics considered at these conferences will be found in the issue of this paper for Feb. 14, 1925, page 256. See also issues for Nov. 1, 1924, page 770, and May 9, 1925, page 744.—[Ed.]

the full value of team play and co-operation.

The American Association committee on education has prepared five specific suggestions for companies which desire to conduct such departmental conferences, as follows:

1. Appoint a small committee representing several departments, with instructions to prepare a brief program of meetings for one or more departments, preferably to be held weekly.
2. Instruct this committee to assign dates and topics for the meetings and to select speakers, the representative of each department on the committee to be responsible for the acceptability of dates, topics and speakers.
3. If agreeable to the committee, arrange to have the programs consist of a half-hour talk by the principal speaker, a half-hour discussion by the group, and, if possible, a half-hour of entertainment of a kind known to be acceptable to the group.
4. It is recommended that outlines of the talks be secured and distributed before the conferences, in order that the topics may be well considered in advance as preparation for the discussion.
5. It is recommended that the representative of a department on the committee be chairman of its conference group in full charge of all the details, and that a secretary be appointed to keep rolls and handle clerical details.

Investigation of Accident Cases and Their Settlement or Trial*

By W. Harry Sefton
Assistant Counsel Brooklyn-Manhattan Transit Corporation

DEPRECIATION in the value of the dollar which the country has witnessed in the last few years has resulted in largely increasing accident claims as well as most other items of street railway operating cost. This increase is reflected in the amounts now required to repair physical damages to property and in the sums demanded in settlement of claims, but particularly in the verdicts which juries now render in fixing compensation in personal injury cases. Indeed, the courts of this and other states have taken judicial notice of the diminished value of the dollar and have held that precedents of former years are of little use in determining what today is just compensation for personal injuries.

This situation has convinced the railway executive that it is now imperative to exercise greater efforts than ever before in discovering and eliminating the causes of preventable accidents. Notwithstanding the maximum of thought upon the executive's part and of reasonable care by the operator, we will of course find that accidents will persist in large numbers. The observations which follow are therefore addressed to the task of efficiently handling claims arising therefrom so that the total of payments on account thereof will be reduced to a minimum.

Prompt Settlements Are the Most Economical

I need not urge upon this gathering the wisdom of promptly disposing of claims arising out of accidents for which a company is legally responsible. To these I would add those claims the successful defense of which is highly improbable. The hazard involved in an unsettled liability claim is more likely to increase with the lapse of time than it is to diminish. A claimant unsettled with practically carries insurance against many ailments unrelated in their cause to the accident out of which his claim arose, but claimed upon the trial to have resulted therefrom. This may extend over a period of from one to three years, depending upon the state of the business of the court in whose jurisdiction the action is laid. It is advisable, therefore, to adjust promptly all admitted liability and other indefensible claims so as to terminate the practically unlimited risk involved. To this end claim agents should avoid a disposition of too great unyielding. In daily contact with exaggerated claims, there is a human tendency to discount to some extent the claimed consequences in every case. Let us always remember, concerning liability cases at least, that the jury is not accustomed to figuring to a nicety, as are claim agents, the value of pain or the loss of a limb, and that it is far more inclined to overpay with liberality than to underpay claims arising out of accidents of disaster proportions.

*Abstract of a paper presented at the annual meeting of the New York Electric Railway Association, Bluff Point, N. Y., June 26-27, 1925.

Value of Thorough Investigation

Of course, it is not reasonably possible to adjust all such cases. The fanciful ideas which some claimants have of the value of their claims prevents the adjustment of many such. For these the courtroom is the proper place.

I know of no more important or profitable procedure, then, than to urge upon my brethren of the railway industry the practice of thorough and unrelenting investigation in preparation for trial. In my opinion it is the greatest protection available to a railroad company in the defense of this class of litigation. Information thus secured not only tends to the limiting of damages to compensation for what it may in justice be responsible for, but not infrequently it results in a company escaping the payment of even less than that. The habit of exaggeration, even when under oath, is so dominant in many such litigants that a carrier thoroughly prepared often is able to prove that part, at least, of the claim is false, with the frequent result that damages are entirely withheld by way of punishment for the attempted deceit.

Separation of Cases for Investigation

In the matter of investigation, I believe that it is desirable to separate cases of serious import from the ordinary run of accident claims and to intrust them for investigation to experienced men and women selected for their ability and interest in the work and who are required to investigate only such serious cases. With the thousands of claims yearly filed it not infrequently happens that information of value is not secured in advance of its beneficial use, only because of delay or digression caused by some matter of comparatively little importance which also required the investigator's attention. The effort to find the facts and means of conclusively establishing them can better be accomplished by this manner of undiverted investigation.

The usual neighbor is a medium of great information to the investigator provided the source of information is treated confidentially. He should never be overlooked. We are inclined, however, to accept too readily as final a disinclination to speak when first requested. He does not wish to be known as an informer, yet a neighbor's sense of justice will usually open his mouth.

In my experience a form letter sent to those whose names have been turned in as witnesses, requesting the answering on an accompanying blank of questions covering salient facts of an accident, is a most effective aid and sometimes a powerful weapon in the trial of these causes. This information, if requested out of fairness to the employee whose conduct may be in question, is frequently forthcoming, especially if the employee has not been at fault in causing the accident. The statement may thereafter be used to

COMING MEETINGS
OF
Electric Railway and Allied Associations

July 17-18 — Mid-West Claim Agents' Association, Hotel Jefferson, St. Louis, Missouri.

July 22-24—Electric Railway Association of Equipment Men, Southern Properties, Knoxville, Tenn.

July 22-25—Pacific Claim Agents' Association, Hotel Biltmore, Los Angeles, Cal.

July 24-25—Central Electric Railway Accountants' Association, Hotel Waldorf, Toledo, Ohio.

August 12—Metropolitan Section A.E.R.A., Summer Outing at Pelham Bay Park.

August 13-14—Wisconsin Utilities Association, Hotel Wausau, Wausau, Wis.

August 27-28—Iowa Electric Railway Association, Operators' Section, Hanford Hotel, Mason City, Iowa.

Sept. 10 — Central Electric Railway Master Mechanics Association, Grand Hotel, Anderson, Ind.

Sept. 28-Oct. 2 — National Safety Council, Cleveland, Ohio.

Oct. 5-9—American Electric Railway Association, annual convention and exhibits, Young's Million Dollar Pier, Atlantic City, N. J.

refresh the witnesses' recollection at the trial. When this takes place, as it often does, months and sometimes years after the accident, it will recall the event to the witness in such a manner that he can speak without hesitation, as he is made confident by his self-written record. Not frequently during a trial we find among the witnesses called by a claimant one who has returned a filled-in blank in which his description of the accident exonerates the carrier. It is then that the self-written statement proves of greatest value. When confronted with his own handwritten answers or narrative escape is impossible and his testimony, if different, is rendered harmless.

Some Trial Observations—Employees as Witnesses

Of course, the trial juries of all damage suits in our higher courts are usually drawn from the community served by the carrier. It is here that the good will of the traveling public is an asset of the greatest value to the company. Not that you thereby secure what you are not entitled to, but the absence of prejudice and ill will makes it easier to receive that fair consideration of a defense which bias created by inconsiderate treatment of the public renders almost imposible. This good will of a community as reflected in the jury box enables the honest defense and its fair presentation to have an impartial hearing, so that the belief of former days that juries were prone to find verdicts mostly based upon prejudice can no longer be considered true. In fact, it is now the practice with us in Brooklyn to demand jury trials in those inferior courts where claimants may have waived trial by jury.

When I speak of honest defenses fairly presented, I have in mind the very human tendency of mankind to picture matters in which we are interested in the most favorable light. The frank admission of liability when the employee is solely at fault will secure the confidence of the court and jury in their consideration of such evidence as to the extent of the injury as the company may be able to offer.

In fact, I think that it can be justly said that more cases are lost in court by the weakness of a carrier's defense as established by testimony of employees than by the strength of a claimant's case.

The ability when called to court as a witness to make a favorable impression there by appearance and by manner of speech is a consideration which every employment department of a carrier should have before it in the selection of employees. Do not hastily conclude that this is asking too much or seeking an ideal not possible in practice. Few indeed are the employees who are not called upon sooner or later to present in court the company's version of an occurrence, upon the belief in which may depend thousands of dollars. It is the experience of every lawyer, and indeed of many laymen who have served upon juries, that a defense is sometimes unconvincing because of the failure of the employee whose conduct is in question to present in understandable language or in frank manner an explanation of his acts.

A consideration of this feature in an applicant's suitability has no necessary relation to either his mental education or refinement of manner. The careful man, of simple speech and honest gaze, does not need to possess either education or more than mental equipment of the average workingman. Eliminate the quarrelsome man and the surly type, for these are the men who lose for you not only the good will of the traveling public but who create situations productive of trouble and who are powerless when called upon to extricate you from it.

Nor is this unfair to the applicant, for every man's progress through business life is more or less affected by his possession or lack of these simple elements, and the property of investors in railroad companies is at least entitled to the same safeguards with which the average business man seeks to provide himself when he selects an employee whose duties make desirable the possession of qualities such as I have indicated.

Track Economies Through Welding*

By R. B. Fehr
Development Engineer Una Welding & Bonding Company

LOWEST cost of maintenance can hardly be expected with the cheapest track construction. It is more likely that the most expensive track will give the least cost of maintenance. It thus becomes the duty of the engineers to determine where the proper balance is between first cost and probable maintenance cost, so that when interest, depreciation, and other fixed charges on the original investment have been added to running costs, the total will be a minimum.

The cost of track construction varies roughly between $40,000 and $60,000 per mile of single track in paved streets. The direct cost involved in installing 176 welded joints (1 mile of single track) at $7.50 per joint will amount to $1,320, which is 2.6 per cent of the total cost of track construction, assuming $50,000 per mile of single track. It is thus seen that each welded joint will be largely responsible for an investment in track of approximately $300, for it has generally been conceded that the rail joint has been the "weakest link in the chain."

When a comparison is made of the costs of installing mechanical rail joints and welded joints, the additional cost of installing a properly welded joint appears so slight as to be negligible, especially when it is considered that the life of the track is greatly prolonged and the maintenance cost reduced, if not eliminated. This difference in cost compared with the average mechanical joint can be figured at less than $3 per joint, totaling about $500 per mile of single track or about 1 per cent of the original cost of single track in paved construction.

General Uses of Welding Equipment

Welding, particularly by the electric arc process, offers a simple means by which the metal that has been worn away can be replaced at a minimum of expense. The parts which have been repaired by welding may not be as strong or as good in every respect as the original parts were when new, but when the cost of repairing these parts by welding is figured against the cost of replacing them, particularly in the case of special work, usually it will be found that a marked saving has been effected by welding.

Likewise, the welded type of bond largely has replaced the mechanical type of bond on traction lines, not only because of the decreased cost of installation, but because of increased durability and permanence of contact. A comparatively recent important development in connection with the application of welding to bonding has been the use of both carbon and metal electric arcs, in the welding of copper to steel. With the aid of a special copper alloy welding rod, it has been found possible to provide the desirable metallurgical conditions — deoxidizing agents, cleansed surfaces, fusible slag, etc., so as to obtain reliable copper-steel welds, free of porosity, and having the shearing strength of copper.

By means of modern welding equipment and a recently developed welding process, it is now possible to join copper cables in such a way that all the strands in each cable are welded to a solid copper casting, providing durability, reliability, and 100 per cent conductivity. An important advantage involved in the use of this process is that no particular attention need be paid to the cleaning of the cable, no matter how full of tar and dirt it may be. It is only necessary to remove the outside insulation. The action of the carbon arc is such that the cable becomes absolutely clean for welding purposes. Furthermore, the time required for the actual welding operation is only three to five minutes on a cable as large as 500,000 circ.mil.

The chief reasons for the failure of the bolted type of joint are of interest. The bolts alone, except in special cases where a large number of carefully fitted bolts in reamed holes were used, could not produce enough friction between the plates and rails to prevent the expansion and contraction of the rails with changes of temperature. Furthermore, since no two rails are exactly alike, it was found impossible to obtain an exact mechanical fit of the fish plates unless the latter had been specially fitted.

The gap between the rail ends, which in general were not properly abutted, and which even in the case of careful abutting would open up because of changes of temperature, was the cause of subsequent cupping at the

*Abstract of paper presented at the annual meeting of the New York Electric Railway Association, Bluff Point, N. Y., June 26-27, 1925.

joint, particularly on the receiving rail, with the resultant impact caused by passing car wheels, then more cupping and still greater impact. The combined impact and loosening of the joint, together with improper design of fish plates, produced a shoulder on the upper fishing surface of the plates at the joint with the result that the head of the receiving rail was not properly supported, the action becoming worse and worse. The effect of impact at the joint naturally caused increased destructive action on the ties and foundation, and this result in turn reacted on the joint, which became progressively worse and worse.

The pavement naturally had a short life in the vicinity of such joints and the cost of repairing broken-down paving became quite an item in maintenance work. Every mechanical joint had to be bonded in order to secure a satisfactory return circuit and to mitigate electrolysis. The bonds, which until the past decade were chiefly of the mechanical type, were subject to the usual troubles of faulty workmanship in installation and subsequent deterioration because of corrosion and the unequal expansion of steel and copper.

To summarize the most important matters that must be kept in mind for successful joint welding it should be realized that every job of welding requires three essentials: (a) Proper supervision, (b) good equipment and (c) competent operators. The responsibility should be placed squarely on the shoulders of a competent welding supervisor, for with the necessary authority he will see to it that he has good welding equipment, well-trained, conscientious operators, and the proper preparation and inspection for each welding job.

In the case of seam-welded rail joints, the gap between the ends of the rail heads must be completely and permanently eliminated by bringing properly and carefully prepared rail ends together under compression. The idea is to obtain this compression by mechanical means in setting up the joint and then to maintain this compression by the seam welds which, as shown conclusively by recent investigations, augment the compression obtained by mechanical means in the first place. Properly designed fish plates must be specified and used, so as to provide ample mechanical strength, large well-fitting contact areas, and easy welding conditions for the operator.

Use should be made of the latest improvements in welding practice, involving modern equipment, the right kind of filler rod and a greatly improved welding process, which, on the basis of severe comparative tests, will give long fatigue life to rail joints. (The fatigue life of rail joints appears now to be dependent on the fatigue life of the fish plates rather than on that of the seam welds). Finally, the joint, as soon as possible after the welding has been completed, must be carefully ground. The grinding, preferably by the reciprocating method, is easily accomplished, as very little material must be removed. The result is that for all practical purposes, a continuous, homogeneous, running surface of the rail, in the condition that it was received from the steel mill, is obtained and then maintained without further expense.

New Central Interurban Map

BLACK prints of the official interurban map of the Central Electric Traffic Association are now ready, and will be furnished to members at a cost of 50 cents each. These prints were made in compliance with requests of several members at the last meeting of the association, and are for use in making reduced cuts of the map for publicity purposes.

Officials Elected at Bluff Point

AN ERROR was made in last week's issue in the names of the vice-presidents of the New York Electric Railway Association, elected at the Bluff Point meeting on June 26. The correct names of the three vice-presidents follow:

First vice-president: William M. Foster, Rochester, Lockport & Buffalo Railroad.

Second vice-president: William G. Gove, Brooklyn-Manhattan Transit Corporation.

Third vice-president: William E. Thompson, Third Avenue Railway, New York.

American Association News

Power Generation and Conversion

HOLDING its final meeting for the season, the committee on power generation and conversion of the Engineering Association met at association headquarters, New York City, on June 29, 1925. Members present were L. D. Bale, chairman; H. W. Codding, H. A. Kidder, F. W. Peters, Mr. Dixon representing C. A. Butcher, and Mr. Van Deventer representing G. W. Saathoff. Non-members present were P. Bloomers of the H. H. Robertson Company and G. Solberg of the General Electric Company.

The sub-committee on revision of existing standards reported that the situation regarding specifications and contract for the purchase of fuels is in much the same position as last year. A sub-committee of the prime movers committee of the National Electric Light Association is studying the subject, and the sub-committee of the Engineering Association therefore recommended continuing it for another year, awaiting final report of the prime movers committee.

The sub-committee studying existing practices in design and operation of automatic substations, including the subject of remote supervisory control, had prepared definitions of the two types of stations, based particularly upon the protection afforded to service and equipment. A tabulation was also presented of the various automatic devices, protective and operative, making up the control equipment of the two stations.

An incomplete report on supervisory and remote control systems was presented. Certain portions of this report were accepted, and additions which will be made to the final report were discussed.

The subject of automatic railway substation d.c. feeder control appeared to have had no new developments since last year's report. Hence it was recommended that it be held open for future consideration by next year's power generation and conversion committee.

The sub-committee on ventilation of automatic substations and reduction of noise in operation stated that a very successful test had been conducted on the Chicago Rapid Transit Company's 2,000-kw. Central Street, Evanston, automatic converter station. Tentative arrangements have also been made to conduct tests on one of the Cleveland Railway Company's stations, and it is hoped that these data can be added to those already obtained for the final report.

The sub-committee on specifications for high tensile strength bolts for use on superheated steam pipe lines reported that in its investigation it had found that the American Society for Testing Materials had prepared a tentative specification for high temperature alloy bolting, so that it was recommended that no further action be taken at present.

Special Reports Available

SPECIAL reports have been prepared by the bureau of information and service of the American Electric Railway Association and are available to member companies in good standing upon request:

Bulletin No. 31. One-Man Car Controversies. A summary of recent cases in which the operation of one-man cars has been attacked, with accounts of the developments in each case, copies of anti-one-man car legislation enacted, the final settlement of the case and copies of commission or court decisions where any were given.

Bulletin No. 32. Bus Operating Reports. Copies of annual statements of independent bus companies together with other miscellaneous data on their operations taken from various sources.

Bulletin No. 33. Trend of Material Prices. New edition of the association's bulletin bringing up to July 1, 1925, the trend of prices of materials used by electric railways based on data furnished by manufacturers.

Bulletin No. 34. Traffic Ratios—1924, Part III. Combination City and Interurban Lines. Tabulation of comparative unit figures derived from the operating reports of these companies for 1924. Included in the data given are the average speed, revenue passengers per mile of track, per car-mile per car operated, the operating ratio, revenue per mile of track, operating income, etc. Similar information is given in an appendix for a miscellaneous group of companies that do not fall directly in any of the other classes.

In addition to the above, supplements to the Wage Bulletin, Fare Bulletin, and Cost of Living Studies (Bulletin No. 35) have been prepared bringing them down to date.

Maintenance of Equipment

Monorail Facilitates Handling of Shop Parts

VARIOUS equipment parts are handled with facility in the repair shops of the United Railways of St. Louis by means of a very complete overhead monorail system. This extends throughout the different departments of the shop, with branch lines direct to work benches and machine tools. The monorails are so placed with respect to the machines that the material is deposited adjacent to them and can be handled with a minimum of labor. Air hoists are used for lifting and these are controlled from the floor in the usual manner.

In the Shops of the United Railways of St. Louis a Monorail System Serves All Important Machine Tools

In addition to the monorail system, a jib crane is installed to serve each important machine tool. An air hoist or chain block is used, depending on the lift and weight of material to be handled. These jib cranes are so arranged that the heavy parts of trucks and railway motors can be lifted readily and placed in position on the tools for machining. In several cases they can be transferred directly from one machine tool to another without the intervention of the monorail system. This method of handling parts in the repair shop has made a material reduction in wasted time, with corresponding saving in labor cost.

Hot Bearings Versus Roasted Armatures

HOT bearings and overheated armatures which had become epidemic on one electric railway property caused considerable controversy between the armature room and overhauling shop as to which source was more responsible for the trouble. The armature room foreman insisted that the damage to the armatures was caused by the bearings becoming hot, while the overhauling foreman claimed that the hot bearings resulted from the overheated armatures. Fixing the responsibility was difficult, since after a bearing has become overheated and the babbitt melted out it is impossible to determine the exact cause of the failure. In the case cited, several of the wire armature bands had broken. This may have been caused by the expansion of the armature from overheating. On the other hand, if the bearings had become hot and allowed the armature to rub the pole faces, the bands would be cut. A loose wire band getting into a bearing would cause it to run hot and so the hot armature bearing might thus indirectly result from the overheated armature.

Regardless as to which theory may have been correct, it is evident that hot bearings are sometimes caused by conditions quite removed from the bearings themselves. Arcing between the brushes and commutators must produce heat, and the most likely path for dissipation of the heat is through the armature shaft and bearings. Excessive sparking may be caused by weak brush-holder springs, improperly spaced brushes, rough, dirty or loose commutator segments, weak fields, loose connection of the leads into the brush-holders, or pole pieces that are not tightly bolted. Usually such defects are not considered as causes for hot bearings, but they may cause overheating quite as much as the use of improper or insufficient lubricants.

Where there is evidence of overheating without complete damage to the equipment the most economical course is to locate and correct the defect rather than to flood the bearings with lubricant. The latter not only adds to the lubrication cost but increased maintenance costs result from the parts which are damaged. Maintenance forces should be impressed that many defects which are ordinarily looked upon as of minor importance may throw additional strains on other parts of the equipment and cause failures that are costly to repair.

Keeping Friction Tape Tight

CABLES in many substations are covered with friction tape at the ends where they are attached to the switchboard studs. After being wrapped around the cables the tape is painted or varnished to give it a smooth surface to which dust and dirt will not readily adhere and to prevent the absorption of moisture. After installation the tape dries out

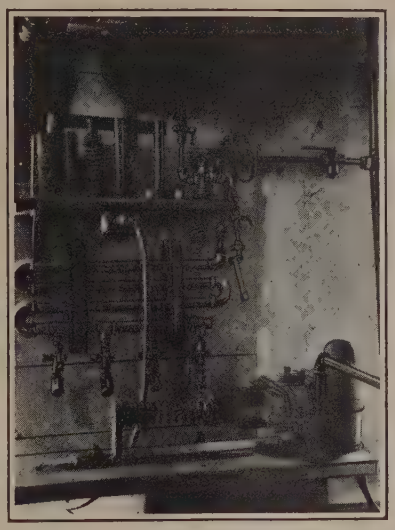
to some extent and there is a tendency for its ends to loosen. It is also general practice to wipe down the cables in order to keep them clean. This also tends to loosen the ends of the tape.

Two methods of keeping the ends from loosening have proved satisfactory. One is to wrap the last turn of tape loosely while applying, and pull the end of the tape down underneath this last turn while giving it the final tension. The second method is to tie the end of the tape in place by winding several turns of strong soft linen twine around it. After the painting or varnishing a good appearance is presented and the loosening of the ends thus is prevented.

Governor Ring Lapping Device

LAPPING in the rings on the Westinghouse S-6-A, S-6-B or type J governors is done automatically by a simple device that has been designed in the shop of the Houston Electric Company. This consists of a magnetic coil mounted on the wall over the workbench and arranged so that it automatically opens and closes the air valve to the governor on the bench below. The electrical and air circuits are connected so that the governor is actuated periodically, thus moving the governor piston back and forth within its housing. The spring shown on the bench in front of the governor piston assists in moving this piston back after it has been pushed out.

Lapping compound is applied to the ring, so that the movement of the piston soon grinds the ring to a snug fit, much in the same manner as would ordinarily be done by hand. The arrangement enables a workman to set up a governor in position and allows the lapping process to be carried on automatically while he goes about other duties. In general, the work is completed in about 30 minutes, but only a comparatively small part of this time is required for setting up and taking down the governor. The remainder of the time which would ordinarily be consumed in hand lapping is available for other purposes.



This Simple Arrangement in the Houston Electric Company's Shop Enables Governor Piston Rings to Be Lapped Automatically While the Workman Is Attending to Other Duties

Adjustable Staging Saves Time in Paint Shops

AN ADJUSTABLE scaffolding which is used in the paint shops of the Southern Pacific Company, at Beaverton, Ore., is shown in accompanying illustrations. The upright members are of wood with steel rods inserted at 12-in. intervals. Steel brackets are used to support the planking, being arranged to fit over the top of one of two adjacent rods. The bottom rod serves as a support for the base of the bracket. With this arrangement the staging can be raised or lowered conveniently so as to adjust it for any height desired in painting cars. This type of staging is also installed on either side of one of the yard tracks so that work can be done outside when weather permits.

The Southern Pacific Company uses spray painting for coating the under body parts and trucks but uses hand painting for the car bodies themselves. Experiments are being conducted to develop a satisfactory method for repainting "crocodiled" surfaces so as to give a smooth finish, without the necessity of removing old paint.

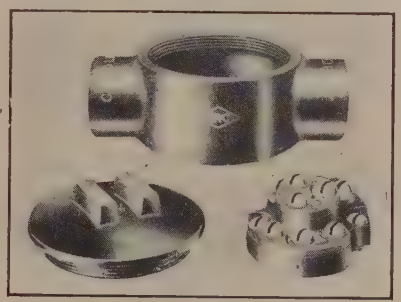
Adjustable Scaffolding Used in the Beaverton Shops and Along Outside Track of the Southern Pacific Company

This scaffolding consists of wooden uprights with cross rod supports. Iron brackets hook over the rods so as to form a flexible system that can be adjusted quickly for varying heights.

New Equipment Available

Screw-Cover Condulets

SCREW covers are a feature of a new type of condulet fitting being placed on the market by the Crouse-Hinds Company, Syracuse, N. Y. These condulet fittings are made of cast iron while the covers

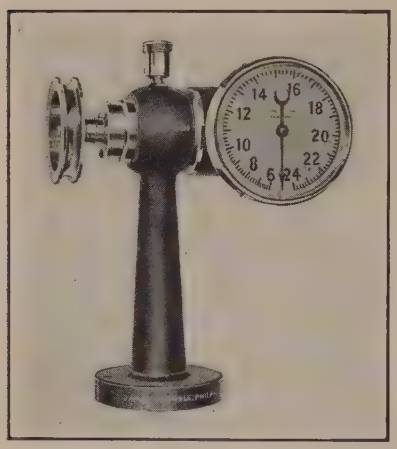


Condulets with Screw Cover and Connection Block

are of cast brass. The use of threads on both cover and base insure a tight fit. The cover is provided with two bosses which permit the use of a wrench, screwdriver, or bar for turning the cover. If desired a gasket can be furnished for use between cover and condulet where precautions are necessary to keep out water. The condulets are made with liberal dimensions so as to provide ample space for taps and for the passage of additional circuits where desired. They are made in two sizes of $2\frac{1}{2}$ and $3\frac{1}{2}$ in. diameter.

Tachometer with Continuous Speed Indication

FOR the continuous indication of speed a stationary type of tachometer know as the Jagabi type B has just been placed on the market by James G. Biddle, Philadelphia, Pa. The instrument operates on the centrifugal principle, runs in either direction and is said to be remarkably smooth running and dead beat. It is operated by means of a ¼-in. round belt and pulley, the latter carried on a ball-bearing shaft. The pedestal on which the instrument is mounted is made of aluminum. Ranges of speed up to 8,000 r.p.m. are available, but the instrument is recommended chiefly for indicating speeds between 150 and 1,200 r.p.m. Oil cups are provided for the shaft and for the tachometer mechanism.

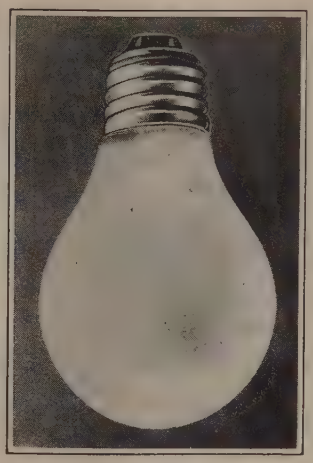


This Pedestal Mounted Tachometer Has Speed Ranges Up to 8,000 R.P.M.

The type B tachometer is suitable for use in indicating speeds of all types of rotating machinery where a portion of the rotating shaft is readily and safely accessible for belt drive, as is most frequently the case in electric railway shops.

Lamp Bulbs Frosted on Inside

DEVELOPMENT of a new line of "Mazda" lamps is said to embody a most outstanding achievement in incandescent lamp manufacture. The principal feature of the new line of lamps is the inside frosting of the bulbs which leaves the exterior surface smooth, so that it will not collect dust or dirt. The inside frosting is an excellent diffuser of light, and it absorbs little more than a clear lamp. As the new line of lamps will replace both



25-Watt "Mazda" Lamp with Inside Frosting

round and straight side bulbs, a composite bulb, pear-shaped, has been adopted. Owing to improvements in the filament and other features of construction the lamp is more rugged than previous lamps for electric car lighting service.

The new line not only produces better light for less money but also embodies a program of standardization, whereby the new type of lamp in possibly five sizes may eventually replace more than forty present types and sizes of lamps. The United States Department of Commerce is actively encouraging standardization and simplification in industry, and consequently has indorsed this program.

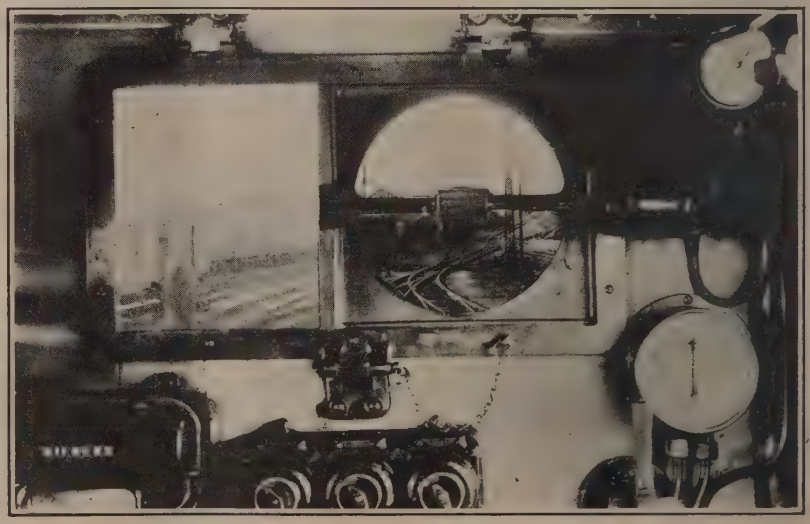
The first lamp of the new line is a 25-watt size, available to the trade since July 1. This lamp is intended primarily to replace twelve previously manufactured types, which are now made in four shapes, including straight side and round types, and in three finishes. Other units of the new line of lamps are being developed at the present time to take care of all general lighting service.

Clear-View Screens for Electric Locomotives

BY ROTATING a polished glass disk on a central bearing by means of a small electric motor at such a speed that rain, spray and snow are thrown off, transparency is maintained. This principle is used in the Kent clear-view screen, manufacturing and selling rights for which have just been taken over by Charles Cory & Son, Inc., New York, N. Y.

The complete equipment is supplied in two standard forms. The first consists of a mechanical unit with disk, frame, motor and motor bracket mounted in a polished teak frame which will take the place of an existing window in an electric locomotive or car. A metal frame hinges inward to allow access to the front of the disk.

In the second type, which is known as the "hood" pattern, the mechanical unit is mounted in a hood that revolves upon a metal pedestal. This type is suitable for any exposed position such as for signals or open bridges. Inside the hood there are teakwood elbow rests so that the observer may put head and shoulders within the shelter of the hood and use his glasses in comfort unaffected by the weather. By a movement of his body he can revolve the hood in any direction that is required. The hood has a canvas back to protect the inside when not in use.



Clear-View Screen Applied to One of the Windows of an Electric Locomotive

The News of the Industry

Fight Likely in Oakland

Key System Applies for Higher Fare—Men Demand Increased Wages—$6,000,000 Expenditure Ahead

The Key System Transit Company, Oakland, has applied to the California Railroad Commission for permission to increase rates on its ferries and electric railway lines. The present rates are 6 cents on street cars and 18 cents on ferries. The application sets forth that the company must spend $6,000,000 for improvements and extensions. It further declares that the revenue of the company for 1924 fell short by $1,400,000 of producing a return of 8 per cent based on a conservative estimate of present valuation of the company's properties, and that a greater loss is in prospect this year.

C. O. G. Miller, president of the railway, said that at the time the present company took the properties over it was not believed the existing rates were adequate to provide for the extensions deemed necessary and at the same time make an adequate return upon the investment. The management, however, determined to give the old rates a fair trial before suggesting a readjustment. This meant the expenditure of more than $1,000,000 last year on improvements and approval of a $6,000,000 replacement and construction program to give the East Bay communities first-class transportation service. In conjunction with the application Mr. Miller said:

> We ask the assistance and counsel of the public in finding a solution for our rate problem. Good transportation service is fundamental and basic to our civic and industrial development, and its cost must be met by adequate revenues. We, therefore, invite the co-operation of all East Bay citizens, residents and governmental and civic organizations in solving this problem.
>
> Our view is that the people of the East Bay communities are willing that their transportation companies should receive rates which grant a proper return upon the investment.

Coming as it does on the heels of a request on the part of some of the East Bay municipalities, especially Berkeley and Alameda, for a reduction in ferry fares, the application for an increase will probably have the effect of bringing Oakland, which has remained "on the fence" in the ferry fare case, into the fight with her sister cities.

Some of the ardent bus partisans are being blamed for the trouble by the more conservative element. It is contended that with eleven East Bay bus lines of the Key System Transit Company running at a loss and with the cry for more being constantly raised, the inevitable result must be increased fares.

Another angle of the situation is the demand of the platform men for higher pay, an issue about to be arbitrated. The men have asked an increase from a sliding scale of 49 to 58 cents an hour to one of from 75 to 80 cents an hour. Two members of the arbitration board have already been named, but as yet no agreement has been reached on the third member.

More Five-Cent Zones in New Jersey

The Board of Public Utility Commissioners of New Jersey has approved, with two modifications, the new schedule of rates and fare areas filed by the Public Service Railway for its Riverside line, effective July 1. The fare in each of the sixteen areas will be 5 cents. M. R. Boylan, vice-president in charge of operation, said:

> The 5-cent fare has met with popular approval on those of our lines where it is effective. It provides as low a local fare as is charged anywhere in the country and, as a matter of fact, gives the municipalities we serve a lower rate than is charged in all but a few American municipalities. Its effect now has been to stimulate local riding for the benefit of local merchants and business people and to put through fares on an equitable basis.
>
> With the co-operation of the people along the Riverside line, we expect to retain for them the advantage which this low rate brings about, and we are prepared to do our full duty in the matter of providing adequate and convenient service.

Eight Cents for Twin Cities

Cash Rate Advanced by Railroad Commission, but by Purchase of Tokens Patrons Will Be Able to Ride at Old Rate—Further Litigation Likely

THE Minnesota Railroad and Warehouse Commission on July 3 ordered a cash fare rate of 8 cents per passenger on the lines of the St. Paul City Railway and the Minneapolis Street Railway, and ten tokens for 60 cents. This means that the present rate continues for those who buy tokens, with a new rate for cash-fare passengers. The universal transfer system was left in force. The new rate goes into effect on Aug. 1.

Attorneys for the cities immediately filed notices of appeal with the Ramsey County District Court and the Hennepin County District Court, and the street railways with the U. S. District Court for an order restraining the cities from interfering with the enforcement of the new rate, and asking the court to determine what will be a just rate of fare on the ground that the commission's rate is confiscatory. The federal court hearing will be held on July 10. Action by the cities is to keep the commission and the companies from putting the new rate into effect. The action by the companies starts a new case against confiscation of property. The race between attorneys was to determine the jurisdiction of the respective courts, whether state or federal.

Street railway officials were out of the city and an official statement on the situation was not forthcoming. Papers were served by the cities on counsel for the railways.

Minneapolis has held that the Minneapolis Street Railway is bearing part of the expense of operating the St. Paul City Railway, which is not so good a producer at the same rate as the Minneapolis lines. The commission made no distinction in the decision.

As to this phase the commission held:

> It has been the desire of this commission to leave undisturbed the operating situation in the Twin City Rapid Transit system, of which the St. Paul City Railway is a part. We pursued this policy in refusing to abolish the neutral zone, and we likewise are reluctant to fix and establish a different rate of fare in one city than in the other. The same fare has existed for many years and the company has given no indication that it desires it abolished. A rate of fare, however, that will enable the Minneapolis company to earn a reasonable return is not sufficient to produce a reasonable return upon the St. Paul property.

The commission found that if St. Paul reduced its street car obligations either of two combinations would produce a fair return, or an average fare of 6⅔ cents: Seven cents cash with four tokens for 25 cents, or 8 cents cash with ten tokens for 60 cents. In the case of Minneapolis the Fort Snelling reservation line is included in the city, and the Columbia Heights extension is excluded.

Valuations Fixed

For the purposes of determining a fair rate of return the Minneapolis company property value was set at $26,767,226 as of Jan. 1, 1925, and for the St. Paul company at $16,196,090 of the same date.

Under a law passed by the 1920-1921 Legislature jurisdiction over financing and rate making for electric railways was vested in the Railroad and Warehouse Commission. In April, 1921, the two companies asked for indeterminate franchises. In August, 1921, the commission granted a temporary rate of fare of 7 cents cash with four tokens for 25 cents. On appeal by the city the Hennepin County District Court restrained the company from putting the rates into effect, and the 6-cent rate has continued until now. Valuation proceedings then began which have just been concluded and brought up to date. Litigation by St. Paul in the Ramsey District Court delayed the permanent rate order.

The commission referred to the fact that when the court restrained the Minneapolis company from making effective

the temporary rate of 7 cents ordered on Aug. 29, 1921, the company sought no further relief, and, reducing wages of employees 11.36 per cent and abolishing the so-called neutral zone (or making the single rate of fare applicable only within the limits of each city), continued the present fare of 6 cents. Says the commission:

After nearly four years we now find that with such reduction in operating expenses and the collection of additional fares in the neutral zone the company is still failing to earn a reasonable return upon the fair value of its property. The evidence in the case shows that there has been a steady decrease in the number of revenue passengers during this period. This condition is undoubtedly due to the increase in the use of the automobile.

This revolution in transportation brought about by the motor vehicle calls for new adjustments to meet the situation if the older carriers are to continue to operate. The municipalities must either relieve the rail carrier of impositions in the shape of service demands, taxes, paving requirements, and other special assessments or the public must submit to increased fares. This commission has no jurisdiction over these impositions. The relief if it is to be given in that quarter must come from the municipality.

Our study shows that an average fare of 6.43 cents is necessary to produce a 7½ per cent return upon the fair value of the property of the Minneapolis Street Railway upon the basis of present operating expenses and service rendered in 1924 of 7.6 passengers per car-mile.

The commission then proceeds to comment on the fact that the regular carrier as a wholesale buyer is entitled to a different rate of fare from that which the transient rider contributes to produce the service. The logical solution is the cash fare and a token or ticket fare. There should be sufficient spread to induce the regular rider to buy tokens, and these should be sold in sufficient quantities to keep the transient rider a cash customer.

The commission adds:

A rate of fare that will enable the Minneapolis company to earn a reasonable return is not sufficient to produce a reasonable return upon the St. Paul property. This condition arises not alone from the differences inherent in the operations of the two companies but also by certain conditions which are set forth in the report of the commission's engineer.

These conditions included the statement that standards of service for each of the two companies are dictated by the respective City Councils. In St. Paul the standard resulted in about 7 revenue passengers per car-mile, in Minneapolis 7.6 passengers. Had the St. Paul company's requirements been equal to those of the Minneapolis company a saving in operating expenses of about $192,638 would have resulted. This would have brought the 1924 rate of return on the St. Paul property to 5.7 per cent.

In St. Paul the ratio of taxes to revenue is 9.77 per cent, in Minneapolis 7.77. If the St. Paul company's local taxes had been proportioned to those paid by the Minneapolis company its operating expenses in 1924 would have been decreased $91,512.33.

In St. Paul the city requires a 19-ft. width of paving on double-track streets and in Minneapolis 14 to 16 ft. In 1924 the St. Paul company expended $27,045, compared with $14,924 in Minneapolis.

Although the commission has no jurisdiction, it states that there is only one way the discrepancy as to paving, etc., may be removed. This is for the city to relieve the company of obligations in the way of taxes, paving and special assessments in an amount sufficient to place the company upon a parity with the Minneapolis unit in the matter of rate return.

In fixing the rates of fare in St. Paul on the same basis as found necessary in Minneapolis the commission admits that the company does not earn the return to which it is entitled under the law or its constitutional rights.

Upon this the commission said:

However, we have reason to believe that the city of St. Paul will give serious consideration to the situation in which the company finds itself, and will take steps to adjust the company's obligations so as to meet the conditions as we find them. However, if we are mistaken in our expectations the company may within reasonable time make application to reopen the proceedings for an adjustment of its fare in the light of the facts as we have found them.

Minor Franchise Provisions Approved

Minor clauses of the proposed new traction franchise have been ratified by directors of the Cincinnati Street Railway, Cincinnati, Ohio, which plans to resume operation of the system now run under lease. Revised copies of the franchise have been printed and will be delivered shortly to the street railroad committee of the City Council. Directors of the railway have agreed to a proposal to sell six tickets for 50 cents, but state that a 10-cent fare will be sought. The city administration is holding out for an 8½-cent fare on the basis of three tickets for 25 cents. It has been announced that Oct. 1 has been set for the new franchise to become effective. It is expected that the revised franchise will be approved by the Council before it adjourns for the summer season.

Safety Zones Urged for Pittsburgh

Installation of 52 raised loading platforms and fifteen safety zones for the protection of passengers of the Pittsburgh Railways has been recommended to the Traction Conference Board of Pittsburgh, Pa., by a special committee. The committee, appointed by the conference board, also recommends that the city and railways co-operate in financing the platforms and safety zones. The cost of the zones is estimated at $1,125 for portable post signs, and that of the platforms at $16,000 for wood, $37,000 for solid concrete, and $52,000 for concrete slab construction.

Lower Fare for Portland Before Commission

Rates of the Portland Electric Power Company, Portland, Ore., were again brought into debate before the Public Service Commission on June 24 by the Housewives Council.

B. B. Fenwick, auditor, and C. R. Lester, valuation engineer of the Public Service Commission, testified to the authenticity of the company's figures, and James I. Sherwood, engineer for the commission, told of his survey of the railway and said that the company had fulfilled its promise to make repairs from additional revenues from the 8-cent fare, with a few exceptions.

In discussing formally the rates with representatives of the Housewives Council, President Griffith stated that the Portland Electric Power Company would establish any car fare, no matter how fluctuating, if 6 per cent could be guaranteed on the property. He said that the revenues of the car lines were still decreasing. Only seven car lines out of 31 within the city limits were revenue producers and if it were not for these "fat" lines the "lean" lines would have to be discontinued.

Former Auditor Defends Detroit Accounting

I. N. Merritt, former auditor of the Department of Street Railways at Detroit, has taken issue with W. M. Hauser, who recently reported a "deficit" of $3,185,227 in the street railway accounts. Mr. Merritt cites that if the D. S. R. is insolvent, as it would appear from Mr. Hauser's report, a similar condition exists on the Cleveland, Philadelphia, Boston, St. Louis, Minneapolis, and Cincinnati railways, and every other railway and business in the country with the possible exception of the Ford Motor Company. Mr. Merritt points out that no bad conditions were disclosed and made public by the reports of Marwick, Mitchell & Company in their audit of the D. S. R., by Price, Waterhouse & Company, nor by the Detroit Bureau of Governmental Research. The report of Price, Waterhouse & Company as of Dec. 31, 1923, when conditions were the same as at the present time, is cited by Mr. Merritt as follows:

This reserve has been created by monthly charges against earnings of amounts equivalent to 3 per cent of the passenger revenue to provide for the settlement of claims against the department arising from accidents.

Larger percentages of income are being set aside for this purpose in most cities in which the operating conditions might be considered to be fairly comparable with the conditions in Detroit. However, it is the established practice of the department to charge against the reserve only payments made in settlement of claims and to charge directly into operating expenses all expenses of conducting the claims division, including hospital and medical charges, workmen's compensation payments, legal and court expenses, etc. . . . In fact, the reserve as of Dec. 31, 1923, is about 100 per cent in excess of the indicated requirements at that date.

Covering the charge that the equalization reserve is also a paper reserve, Mr. Merritt cites the Interstate Commerce Commission's "Classification of Accounts for the use of the Electric Railway Accountants' Association," Section I, account 28 and Section II, account 44, referring to the account the use of which is optional to "provide for the convenience of those carriers desiring to have operating expenses for each month reflect, by general account totals, an equitable monthly proportion of the estimated or authorized maintenance expenses for the year, and at the same time to show the actual expenditures by primary accounts."

The Street Railway Commission at its meeting did not take any definite action with regard to the "deficit," but decided to put into effect a budget system to provide in advance for twelve months the cost of operation, maintenance and construction. Col. H. U. Wallace, the new general manager, has been instructed by Mayor Smith to operate the system as economically as possible, but has been warned against trying to achieve that end by means of any decrease in service.

Boston "L" Trustees' Problem

Governor Says There Must Be No Strike, but Refuses to Back Demand for Arbitration Revision

Governor Fuller of the Commonwealth of Massachusetts surprised the board of public trustees which manages the Boston Elevated Railway by refusing, on July 9, to sanction its request for arbitration of the procedure heretofore followed in selecting boards of arbitration to adjust wages and working conditions on the property. He surprised and disappointed the public as well, if one can judge by the comment of the local newspapers. The present procedure is for the railway to select one arbitrator, the men another and these two a third. The trustees claim that as the public is a party to the operation of the property it should be represented by the third arbitrator, to be selected by the Governor or some other public official.

Two months or more ago the trustees notified the Amalgamated Association and its local division of their desire to change the method of arbitration. This led to correspondence which developed a sharp conflict of opinion, the employees refusing to consider as arbitrable the method of selecting arbitrators. The trustees endeavored to meet the wishes of the employees except as to this fundamental contention. Finally the employees by a vote of 4,950 to 197 decided to strike if the old arbitration procedure was not continued. This was followed by an announcement from the Governor that, on July 9, he would explain to the trustees and the public his attitude toward the controversy. This proved to involve two essential postulates:

1. No strike of the employees of the Elevated will be tolerated, as they are in the public service like firemen and policemen. In the event of a strike no striker will be permitted to be re-employed on the railway while the present Governor is in control.

2. There is no necessity for changing the procedure in arbitration, as the present method has been in successful use for many years and the state is committed to this form of arbitration.

The Governor intimated that if the present trustees cannot handle the situation they will be replaced. His pronouncement leaves them in a dilemma. They may not permit a strike and yet, from their standpoint, they are not permitted to take the step which they have deemed essential to a fair settlement of disputes. An editorial in the Boston *Transcript* of July 9 appears to reflect public sentiment accurately. That paper said:

Governor Fuller has undoubtedly prevented a strike on the elevated system, but what has he done for the car-riding public of the city and to what degree has he safeguarded the future interests of the community? On the face of it, the statement condemns both trustees and employees, but it is the former who are more soundly rebuked for the honest effort they have been making to protect the citizens of Greater Boston against the increasingly arrogant and insistent demands of the union.

The Governor says he regards the present arbitration arrangement as satisfactory. The trustees have asked for a change on the ground that fairer results could thereby be reached. We believe that public sentiment overwhelmingly supports them in that position and also that the Governor should have supported them.

The net results of the manifesto probably will be about as follows: There will be no strike; the trustees will either resign or abandon their position in the controversy; the car men will continue to receive approximately what they want in the way of wages and working conditions. And, as usual, the public will foot the bills.

Court to Pass on Des Moines Strike Issues

Service was resumed in Des Moines, Iowa, by the Des Moines City Railway at midnight, on July 9, following a shutdown of six days. Concessions were made both by the company and organized trainmen. Throughout suspension the company repeatedly proposed to the union that service be resumed pending a decision by the district court on the question of the validity of the working contract between the company and the men signed in 1915.

F. C. Chambers, president of the railway, suspended Conductor Cooper, on July 9, as demanded by the men and agreed to pay over check-off money upon proper authority from individual employees based on the agreement that the company's contention in the court case would not be jeopardized by so doing. Mr. Chambers had constantly stated during the controversy that the public should not be penalized pending a settlement of the contract case by the court. This contract has many objectionable features, including provisions against the use of one-man cars. One of the claims made was that the by-laws of the international union prohibit contracts of longer duration than three years, whereas the Des Moines contract was to run until 1940.

Judge Hubert Utterback has set the case for hearing on Sept. 2.

The City Council announced in the newspapers, on July 9, previous to agreement, that unless a settlement was reached within a reasonable time the Council would grant a competing bus company a franchise for a period of from two to five years.

It should be explained that the strike, called on the morning of July 4, was in protest of the company's failure to discharge J. E. Cooper, a conductor, and to pay the union secretary the "check-off" for the last half of June. It came as the climax of a rift between the union and the company which began with the announcement that the company was preparing to test one-man car operation as a means of curtailing expenses. The union claimed that a service of this kind was a violation of the contract.

$200,000 Paving Claim Disallowed at Chicago

The Appellate Court of the Northern District of Illinois has handed down a decision that the Chicago Surface Lines must pay the city for repaving the company's right-of-way where it is torn up for street and sewer repair work. The disputed items affected by the suit amount to $200,000 and will mean about $40,000 a year hereafter in favor of the city.

The decision was rendered on a test case won in the lower court by the Chicago City Railway, which sued the city for the recovery of $83,000 and had $70,000 additional claims pending. The company charged that the city has been collecting since 1914 for repaving street car right-of-way which had been torn up for sewer or other construction work.

Other companies in the Surface Lines group also have been paying the city for the disputed work. They will now be compelled to abandon their claims for refund.

Bonds Approved for New Orleans Improvements

The Commission Council of New Orleans, La., has adopted an ordinance authorizing the New Orleans Public Service, Inc., to issue mortgage bonds of $5,000,000 with which to meet the expense of permanent improvements to be made to its properties. The ordinance was passed without a dissenting vote, having previously received a favorable report from Commissioner Hall of the Department of Public Utilities.

It was brought out by Mr. Flowers at a conference that the large amounts of money expended by the corporation subsequent to reorganization, had been made necessary to rehabilitate the property so as to make it possible for the company to operate more economically. The request for additional funds was therefore in line with the policy of rebuilding and was more or less a matter of routine.

Fare Hearings in Philadelphia Resumed

Hearings before the Pennsylvania Public Service Commission on the application of the Philadelphia Rapid Transit Company for permanent approval of its present 8-cent cash fare, two tokens for 15 cents, were resumed on July 1. The city and the United Business Men's Association have joined in petitioning the commission to set aside the ruling which allows the present temporary rate of fare. Much of the time at the first hearing was taken up with the counsel of the Philadelphia Rapid Transit Company entering formal objection to the further participation of Dr. Milo R. Maltbie, utilities expert, in the case. Former Judge James Gay Gordon, associate counsel for the company, termed Dr. Maltbie's appearance at a private conference on the fare case held before the official opening of the hearings in Harrisburg an "impropriety." He declared that as the transit company was not represented at that meeting, the four members of the commission who had attended should be withdrawn from further consideration of the fare case. Commissioner Ainey refused the request.

A new angle to the fare situation was a communication from the Philadelphia Chamber of Commerce urging a withdrawal of the city's petition before the Public Service Commission for a reduction in the present rate of fare. The communication to Mayor Kendrick, president of the City Council and the Public Service Commission declared that the 7½-cent fare was necessary for the continued expansion of the service and the further development of its transit facilities.

Survey of Toledo Property

Work has begun at Toledo, Ohio, on a complete survey of the transportation situation in the city under direction of Professor H. E. Riggs of the University of Michigan as the next step out of the difficulties of operating under the Milner ordinance in the last few months. The City Council appropriated $15,000 for the transit survey.

Its committee stated the objects of the survey were to set forth in a comprehensive way recommendations for changing ordinances, existing transit facilities, bus lines, or other means of transit so as to (1) provide an adequate and satisfactory service, (2) reduce rates of fare, and (3) keep tracks and streets in highest degree of maintenance. R. B. Rifenberick, one of Prof. Riggs' chief assistants, is making a preliminary survey.

Prof. Riggs was chief member of the valuation commission which went over the local properties in 1920 and fixed the values now the basis of the Milner ordinance. Walter Brown, political leader and member of the city plan commission, is taking a leading part in attempting to work out the transit problem in Toledo. Speaking before the Council, Mr. Brown declared that a tribunal should abandon that part of the line which is not usable and figure out a fair rate of return on a fair valuation. This should be submitted to the Community Traction Company, with a request for service under the new Toledo plan.

The suggestion of a survey of the situation by an outside expert was originally made by Henry L. Doherty, who also offered to finance the work under certain conditions. It is estimated that the experts' work will take about four months.

Wheeling Company Seeks Increase on Strip Tickets

The Wheeling Traction Company has filed application with the Interstate Commerce Commission and the Ohio and West Virginia Public Service Commission seeking an increase of $\frac{5}{9}$ cent per ticket on the universal strip now used on the divisions of the system. Under the terms of the proposed increase, nine tickets will be sold for 50 cents, instead of ten tickets for 50 cents. Cash fares will not be affected by the proposed rate change and no increase is sought by the company on the special commutation tickets used on the Warwood, Martins Ferry and Bellaire divisions. General Manager G. S. Willis points out that the universal ticket plan has not been interfered with since 1922, when the price of a single ticket was cut from $6\frac{2}{3}$ cents to 5 cents. The increase in patronage expected to result from this reduction has not been realized. Under the proposed tariff, Wheeling's fare on the universal strip ticket basis would be $5\frac{5}{9}$ cents and the average mileage rate approximately $2\frac{1}{2}$ cents.

On the proposed increase Mr. Willis said that cash fares on all divisions would also remain as they are now, with the exception of the Steubenville-Wheeling division. At present the cash fare rate for a five-zone ride on the Steubenville-Wheeling division is 5 cents more by cash than by ticket, but after five zones the cash and ticket rates are the same. Under the proposed change the cash fare rate for a five-zone ride will be the same as it now is, but for six or more zones will be 5 cents higher than at present for the sixth or more zone ride. No change whatever is being made in the zone and lapover rides now in effect.

New York's Home Rule Amendment Unconstitutional

Justice William P. Burr of the Appellate Division of the Supreme Court of New York on July 7 declared the home rule amendment to the State Constitution null and void.

The court reversed decisions favorable to the city, the Board of Estimate and the Commissioner of Plant and Structures in the fight by taxpayers against the municipal bus line on 86th Street. It declared that the city had not received legislative authority to maintain and operate bus lines and that its action in doing so was illegal.

Seventeen different measures, all based upon the home rule law, are voided in New York City by the decision.

Corporation Counsel George P. Nicholson declared that he would at once apply for a stay which would maintain matters in *statu quo* pending an immediate appeal to the Court of Appeals. This stay will be asked, pending an appeal to the Court of Appeals in the taxpayers' suit brought by William Jay Schieffelin, president of the Citizens' Union, and Stewart Browne of the United Real Estate Owners' Association, to restrain the city from operating buses under laws passed by the Municipal Assembly through the authority given by the home rule act.

LeRoy T. Harkness, acting chairman of the Transit Commission, suggests passage of another amendment and enabling act that would be intelligible. He said:

> So far as the matter of buses is concerned, the decision of the Appellate Division does not hinder in the slightest the orderly development of a proper bus policy. There is ample authority under existing general statutes and the city charter for doing this. The means have been repeatedly pointed out by the Transit Commission during the last two years, and recently the Board of Transportation made constructive suggestions along the same lines.
>
> If the city administration will stop playing politics with the question of municipal operation we can quickly get constructive results under existing law.

Institute for Research in Public Utilities Moves to Chicago

A change in location has been made by the Institute for Research in Land Economics and Public Utilities, conducted by Richard T. Ely, the well-known economist. For a number of years the Institute has been at Madison, Wis. It will now be established in connection with Northwestern University, Evanston, Ill., according to an announcement just made public by the Institute. On the completion of Wiebold Hall of Commerce of Northwestern University the Institute will be permanently located in that building.

New Orleans Scale Unchanged

After two months of study of the subject, the Board of Arbitrators designated to consider the new wage clause of the trainmen of the New Orleans Public Service, Inc., and their contract with the company, decided to make no change in the scale of wages for the ensuing year, beginning July 1, 1925. Under the terms of the agreement the men will continue to receive 45, 47 and 51 cents an hour according to length of service in the company. The company sought a reduction of 5 per cent in pay while the car men through their union, asked for an increase of 10 per cent. H. B. Flowers, president of the company, testified that the cost to the company if the increase asked were granted would approximate $300,000 for the year and necessitate an advance in fares from 7 to 8 cents. Two thousand workmen of the company were interested in the outcome.

News Notes

Further Speculation on Insull Plans.—In connection with the reaching out of the Insull interests into the interurban field the Chicago bureau of the *Wall Street Journal* in a special dispatch to that paper says that "when the Illinois Central's suburban service is electrified in 1926 it would not surprise those familiar with Insull methods to see sleeping car service inaugurated between South Bend and Milwaukee over an all-electric route."

Gum for Its Patrons.—Following the success which it has met with the sale of morning newspapers on its cars, the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has gone another step in the direction of bringing added conveniences to its patrons. Chewing gum machines, like the candy machines attached to seats in the theater, have been installed beside every seat on a number of lines as an experiment.

Changes in Zones Disapproved.—The Board of Public Utility Commissioners of New Jersey has refused to sanction changes at this time in the fare zones of the Public Service Railway in Hillside, Union County, although it was admitted that modification might be justified in future. It was asked in a petition filed by Hillside Township that the zones be so arranged that Hillside residents could ride to either Newark or Elizabeth for a nickel, but the request was answered with the claim that such an arrangement would result in discrimination.

New Bridge Opens.—The Springfield Street Railway, Springfield, Mass., began the operation of its Holyoke and Westfield lines by way of the new North End bridge over the Connecticut River, at Springfield, on July 3, following the official dedication of the bridge the previous night. Street railway traffic over the new bridge will be confined, for the present at least, to the Holyoke limited or through cars, the

Westfield cars and the Mittineague cars operated over a portion of the Westfield route during the rush hours only, morning and afternoon. Local cars running to Riverdale on the Holyoke route continue to be routed by way of the Hampden County Memorial Bridge, which for nearly two years, following the burning of the old North End Bridge, furnished the only means by which street cars could enter Springfield from the west side.

Indiana Road Cuts Fares.—The Chicago, South Bend & Northern Indiana Railway, Goshen, Ind., has reduced its fare between Goshen and South Bend from 78 cents to 39 cents, with corresponding slashes in rates between Goshen and Elkhart and Goshen and Mishawaka.

Wages Unchanged in Providence.—The basic wage rate of all the employees of the United Electric Railways, Providence, R. I., except operators of one-man cars and Lincoln welding machines, will remain unchanged until May 31, 1926, according to the award of the board of arbitration. One-man car operators and Lincoln welding machine operators receive an increase of 1 cent an hour under the terms of the award.

Must Continue Railway.—The Maryland Public Service Commission recently ordered the City & Suburban Railway, Washington, D. C., to continue operation of its electric line between Laurel and Branchville. The company, which is controlled by the Washington Railway & Electric Company, had applied to the commission for permission to abandon the line. Contingent upon continued operation of the Branchville line the company was allowed by the commission to abandon service between Laurel and Beltsville. Neither line is profitable, the company contended.

New Jersey Transit Body Reports Progress.—Members of the North Jersey Rapid Transit Commission recently called upon Governor Silzer at Trenton, N. J., to inform him of the progress of the work being done by that body. The informal report covered both present and contemplated plans which have been suggested for affording temporary, as well as permanent, relief from traffic congestion in the northern part of the state. The working out of these plans will require co-operation on the part of railroads, it was shown.

Five Cents for Children.—Effective July 4, children under fourteen years of age are permitted to ride for 5 cents on the Boston Elevated Railway, Boston, Mass. This privilege, authorized by the board of trustees, will continue during July and August.

Ordinance Affirmed. — An ordinance creating the Department of City Transit was affirmed recently by the City Council of Pittsburgh, Pa. The new department, authorized by the 1925 Legislature, will be composed of five members, appointed by the Mayor with Council's approval, who will serve without compensation. The department will have complete jurisdiction over all city-owned rapid transit facilities. The ordinance creating the department has been pending in Council for months.

Recent Bus Developments

Authorizes Union Company to Operate in Fall River

The Union Street Railway will run a bus line in Fall River. A decision to this effect by the Massachusetts Department of Public Utilities is based on the principle that under the present law the commission cannot consistently depart from the policy it has been forced to adopt of allowing a railway to do what any private individual would have a right to do. Neither could the commission anticipate a situation which it is expected will be taken care of by a Massachusetts law which has not yet become effective.

The Eastern Massachusetts Street Railway objected to the operation of motor vehicles by the Union Street Railway in the city of Fall River. It contended that the buses would compete for traffic with the Eastern Massachusetts Street Railway and that such operation would also deprive it of a large amount of income by reason of the joint operation of the street railway cars. It contended that if motor vehicles were operated by the Union Street Railway it probably would have to increase its fares in Fall River.

In reply officials of the Union Street Railway stated that it was not its purpose or desire to compete with the Eastern Massachusetts Street Railway and that it did not propose to take on passengers going from the boundary line between Westport and Fall River into the center, nor would it discharge passengers going from the center to the boundary line. The Eastern Massachusetts Street Railway further contended that the revenue from the joint operation of the railway line had greatly diminished and that the operation of motor vehicles by it would simply anticipate the operation of such vehicles by others.

The commission ruled as follows:

> In view of the present status of the law we feel that we ought to take substantially the same attitude that we took in relation to an application of the Eastern Massachusetts Street Railway for the approval of the operation of motor vehicles between Lowell and Boston (D.P.U. 1048), that is, that we ought not to prevent a street railway from doing that which any individual or corporation may do so long as it receives authority from the local authorities. It is to be observed that our action is but one step and simply authorizes the street railway to own and operate the motor vehicles, provided it receives a license to operate in the city of Fall River from the licensing authorities of that city.

Extensive Bus Service by Indiana Interurban

On favorable report of the Indiana Public Service Commission, the Indiana Service Corporation, Fort Wayne, will practically duplicate all interurban lines by operating bus lines over almost the same routes as supplementary service.

R. M. Feustel, president of the corporation, announced on July 6 that the new bus service would be started within two weeks of the time when the Public Service Commission makes its report. Hearings are now being conducted on one of four petitions filed with the commission and a favorable report is expected within the next few days. The bus service will link Fort Wayne with Waterloo, Peru, Bluffton, Kendallville and all intermediate points.

Bus War Reopened in St. Louis

The Board of Public Service of St. Louis, Mo., has taken under advisement the application of the St. Louis Bus Company, subsidiary of the United Railways, to operate a new bus line from Kingshighway at Arco Avenue to McCausland and Tholozan Avenues in Lindenwood. Hearings held on June 30 and July 1 developed contention between representatives of the railway and the People's Motorbus Company.

The proposed line would use many of the streets on which the People's Motorbus Company now operates. Moreover, with the privilege of transferring to the street cars without extra cost, the United Railways subsidiary would hold a decided advantage in the race for fares in the Lindenwood district. This territory is now served only by the People's company.

Richard W. Meade, president and general manager of the People's Motorbus Company, and Robert Burkham, counsel for that company, opposed the application on the theory that it contravenes the ordinance under which such permits are issued and would be followed by many accidents as the result of competing buses rushing for fares. They contended that under Ordinance 30914 the holder of a bus permit must have the first opportunity to provide additional service.

Messrs. Meade and Burkham contended there was no demand from the Lindenwood district for the new line. On the other hand, Col. Albert T. Perkins, general manager for the United Railways, stated that merchants and residents of that territory had asked for the co-ordinated service.

Mr. Burkham first reverted to the sale of the bus company that failed to materialize. He said that John Hertz, Chicago, principal owner of the bus company, offered to sell for $2,500,000 provided: (1) That the contemplated expansion of the People's Motorbus Company be carried through; (2) that Mr. Meade continue as president and general manager; (3) that the sale be approved by the city administration and the public.

Stanley Clarke, attorney for the reorganization committee of the railway, said that the committee stood ready to pay 100 cents on the dollar on the actual investment value of the People's Motorbus Company's holdings. Mr. Clarke asserted that the bus company's holding are worth $1,400,000 while the price set by the owners was $2,500,000. He said:

> It would be difficult for us to pay such a tremendous profit and then expect the car riders to approve the purchase when the price is saddled on them.

The proposed bus route duplicates the service of the People's Motorbus lines on Kingshighway and also on Southwest Avenue into the Lindenwood district. The new line would tap the Market, Taylor, Manchester, Southampton and Tower Grove car lines of the United Railways, and would exchange transfers with those lines.

Question of Convenience and Necessity in Indiana

The 90-day "grandfather" clause of the new Indiana bus regulatory law was held valid and constitutional in two rulings in Indianapolis courts on June 20. Two judges sustained demurrers to complaints of the Terre Haute, Indianapolis & Eastern Traction Company, in which it asked that the Public Service Commission be restrained from issuing certificates of convenience and necessity for the operation of two bus lines, one by Hiner's Red Ball lines from Indianapolis to Richmond and the other by the Gregg line from Terre Haute to Harmony. Temporary restraining orders were dissolved by both courts. Traction officials say the decision will be appealed to the Indiana Supreme Court.

The 90-day clause provides that bus lines which were in operation in the period before the law took effect may receive a certificate of convenience and necessity to continue such operation without a hearing by making application to the commission within 30 days after the law took effect.

Attorneys for the railway argued that bus service under the utilities act was a service similar to railway service and that the Public Service Commission was without power to grant the certificate without a hearing first to determine whether such service was a public convenience and necessity. The decision said that under the utilities act a "similar service" could only refer to that of a street railway or an interurban railway.

The court said it did not believe the 90-day clause discriminated as between one class of citizens and another and that there was no arbitrary or unreasonable classification created by the 90-day probationary clause.

Joint Bus and Rail Depot for Seattle

Details are fast being worked out for the joint bus and trolley terminal to be built at Seattle, Wash., by the Pacific Northwest Traction Company. Preliminary plans indicate that the structure will cover a space 240 ft. x 120 ft., sufficient for handling twenty buses. One regular and one emergency trolley track will run into the terminal space.

The waiting room will be 71 ft. x 28 ft., and the concourse and the depot each 240 ft. x 60 ft. Leading from the waiting room will be a permanent electric exhibit, which will be railed off at night.

The loading and unloading shed will have a 60-ft. span, with no pillars, and the entire construction will be reinforced concrete. The bus driveway at the depot will have a 3 per cent grade, so that all buses can start without power and leave the building under gravity and brake control. A ramp will lead to the basement for the storage of more buses.

A terminal company will be formed which will also operate similar depots at Olympia and Tacoma. The Seattle terminal will also be available for use by other bus companies.

Illinois Interurban to Fight Back

Its territory having been invaded by the Inter-City Transportation Company, which recently extended its bus service from Madison, Wis., into Rockford, the Rockford & Interurban Railway is completing plans to strike back. A fleet of de luxe buses, W. C. Sparks, general manager, intimated, would be sent out over the Rockford-Madison route in direct competition with buses of the Inter-City Transportation Company. As additional buses are needed to compete with the Inter-City Company, Mr. Sparks said, they will be drawn from subsidiary properties of the Rockford & Interurban Company, principally from northern Ohio and from Michigan.

The decision of the railway to enter into direct competition with the Inter-City Transportation Company is said to have been due to failure of the Illinois concern to reach an agreement with the Wisconsin company not to parallel its interurban lines with buses.

Routes Disapproved.—The request of the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., for bus routes between Indianapolis and Bloomington and Indianapolis and Martinsville was dismissed by the Public Service Commission. That body felt it would not be practical to establish a new route on the Bloomington-Indianapolis road at present because of work being done on the roadway. It also was stated that a route between Indianapolis and Martinsvile would not pay at present.

Route Links Germantown and Roxborough.—Bus service from Germantown and Chelten Avenues to Walnut Lane and Ridge Avenue was established on July 7 with the opening by the Philadelphia Rural Transit Company of Route "B." Single-deck buses are used on this route, which passes through a beautiful residential section, serving the principal Germantown business district and crossing the valley of the Wissahickon by Walnut Lane Bridge. The fare is 10 cents, with 3 cents exchange to other routes.

Allowed to Run Buses.—The Fitchburg & Leominster Street Railway has been authorized to acquire and own motor vehicles and may operate such vehicles in the cities of Fitchburg and Leominster, Mass., upon any public highways or private ways, or portions thereof, upon which it now has a street railway location. It can operate in the town of Lunenburg upon Summer Street, Whalon Road and Lake Avenue.

Crosstown Service Started.—A further step in the attempted solution of the problem of street car service for Oklahoma City, Okla., was taken on June 28, when bus service was started from a point in the west part of the city to the east side and thence northeast to Lincoln Park. This is the city's first crosstown transportation service, all lines heretofore having run to or through the business center of the city. Thirty-minute service is provided. Fare on the bus lines is the same as on the electric cars, 8 cents single fare, two for 15 cents, with complete interchange of transfers between cars and buses at intersecting points, and a second regular fare between the State Capitol and Lincoln Park.

Buys Line.—Announcement has been made by the Wisconsin Power & Light Company, Oshkosh, Wis., of the acquisition of the Manitowoc & Sheboygan Bus Line from the De Luxe Motor Coach Line. This line was formerly operated by the North Shore Transportation Company. With the acquisition of this line the Wisconsin Power & Light Company secures all transportation rights on this route, which will be extended to include through service from Sheboygan to Green Bay via Manitowoc.

Objection of Railway Not Sustained.—The Public Utility Commissioners of New Jersey on June 30 overruled objections of the Public Service Railway and the Public Service Transportation Company and approved municipal permits for the operation of two buses by the Safe-Way Transportation Company between New Brunswick, Bound Brook and Somerville. The route will parallel the tracks of the Public Service Railway for a part of the distance.

More Bus Rights Sought by Providence Company.—The United Electric Railways, Providence, R. I., has filed with the Public Utilities Commission an application for permission to operate two buses between Providence and the Massachusetts State line.

Permits Approved.—The Board of Public Utility Commissioners of New Jersey has approved two permits for bus operation between Asbury Park and Long Branch by the Atlantic Coast Transportation Company, a subsidiary of the Coast Cities Railway of Asbury Park.

Jitney Permits Granted.—Mayor A. V. Fawcett of Tacoma, Wash., recently put through the Council over the City Commissioners fifteen additional permits for jitney bus lines in the city. The permits cover five lines, now served by street cars, which have not hitherto been invaded by jitneys. Twenty-passenger buses will be operated, giving five-minute service. All of the buses will be operated by the Puget Transportation Company.

Takes Over Bus Line.—The business and equipment of the Gray Bus Line has been taken over by the Wisconsin Traction, Light, Heat & Power Company, the buses of which have been operating between Appleton and Green Bay, Wis., in competition with the Gray Line.

Buses to Replace Trolley on Paterson Line.—Suspension of electric railway service by the Public Service Railway, Newark, N. J., between Beckwith Avenue and Market Street and between Grand Street and Baum's Park, Paterson, has been approved by the Board of Public Utility Commissioners. At the same time the board sanctioned the operation of four buses of the Public Service Transportation Company over each of the same routes.

Financial and Corporate

Sale of Detroit United Under Foreclosure Likely

Foreclosure proceedings will probably follow the failure of stockholders of the Detroit United Railway, Detroit, Mich., and of unsecured creditors of the company to subscribe in sufficient amount to a proposed $8,000,000 general mortgage bond issue. Interest payments on three of the bond issues payable July 1 have been defaulted.

A short time ago directors of the company devised a refinancing plan calling for stockholders to subscribe for bonds to the extent of 40 per cent of their par holdings and for unsecured creditors to exchange their claims for a like amount of bonds. Out of the first payment on bond subscriptions were to come funds to meet all of the interest due July 1. At that date the receivers had on hand about $660,000 in cash. Facing current payrolls and current bills they did not feel justified in using practically all of this money to meet interest charges on the bond issues. The receivers were, however, in position to pay interest on the consolidated 4½ per cent bonds covering property sold to the city of Detroit.

There are three issues upon which default is made. These are the first mortgage and collateral trust 6 per cent bonds, the first mortgage 5 per cent bonds of the Detroit & Port Huron Shore Line Railway and of the first mortgage 5 per cent bonds of the Detroit, Munroe & Toledo Short Line Railway.

The receivers explain that there is on deposit with the Central Union Trust Company, New York, trustee under the 6 per cent first mortgage and collateral trust bonds, $500,000 received from the city of Detroit last June. This would ordinarily be applied to sinking fund payments, but the trustee under the issue has decided to hold this cash for pro-rata benefit of all bondholders.

It would appear likely now that the bondholders will form a protective committee in order to plan for the future.

$4,577,000 of Bonds Offered

Halsey, Stuart & Company, New York, head a syndicate which is offering for subscription $1,627,000 of first consolidated mortgage 5 per cent bonds of the Brooklyn City Railroad. They are priced at 96 to yield 5.37 per cent. The bonds are part of a previous authorization. They are dated July 1, 1891, and are due July 1, 1941, and are not callable before the due date. The real estate alone owned by the company is assessed by the city at more than $7,300,000, of which more than $5,500,000 is subject to the mortgage. The present offering is a resale of the securities.

Halsey, Stuart & Company and the National City Company, New York, jointly offer for subscription at 99½ and interest, yielding more than 6 per cent, $2,950,000 of Chicago, North Shore & Milwaukee Railroad first and refunding mortgage 6 per cent gold bonds, Series A. This is an additional amount under the financing arranged by the company last December and described in the ELECTRIC RAILWAY JOURNAL for Dec. 20, 1924, page 1058. That issue was used largely for refunding. It was priced at 98 and interest.

Successor to Kansas City Railways Incorporated

Articles of incorporation have been filed for the Kansas City Public Service Company, Kansas City, Mo., to succeed the Kansas City Railways under foreclosure and sale. The company has only a nominal capitalization at this time, $25,000, but will be the legal instrument that will be used when the railway is bid in at foreclosure sale.

The first mortgage bondholders represented by the reorganization committee are expected to be the only bidders at the sale because the total of the first mortgage debt is considered to be more than the salable value of the property.

Tennessee Electric Deal Approved

More than 85 per cent of both the second preferred and common stock of the Tennessee Electric Power Company has been deposited under the Commonwealth Power Corporation's offer dated May 22, 1925, and the plan has been declared operative. Deposits of stock are being accepted until further notice.

A letter was mailed on July 3 to the holders of Bankers Trust Company receipts that Commonwealth preferred and common stocks called for thereby will be ready for delivery by the depositary on and after July 14, 1925.

Commonwealth common stockholders are also being notified to send their stock to any of the transfer agents for conversion of each share into four shares of new common stock. After the close of business on July 24, 1925, subscription warrants will be sent to new common stock holders evidencing their right to subscribe at $30 per share to additional new common stock to the extent of 10 per cent of their holdings, such subscription rights to expire Sept. 15, 1925.

Byllesby Gets Smith Property

Announcement was made at Milwaukee, Wis., on July 9 of the completion of the sale of the Wisconsin Public Service Corporation to the H. M. Byllesby Engineering & Management Corporation of Chicago. The deal is said to involve $26,000,000, the terms of which require a cash payment of $11,000,000.

The property involved is one of the so-called Clement C. Smith holdings. Among its services the company operates the local railway lines in Green Bay and the interurban service from that city to De Pere, Kaukauna and Duck Creek. Included in the Green Bay division are 41 miles of electric railway and in the Manitowoc division 9.5 miles.

President Shannahan's Property Reported in Deal

Financial circles are speculating on the possibilities of a deal which will involve the Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va., the common shares of which have risen from a low of 63 in May to a record high recently of 110. The preferred shares, which sold at 90 in May, have lately sold as high as 111, and it is said that practically all the accumulation of these stocks has been by "New Haven interests." Reports persist in market circles that the same interests which recently purchased the Virginia Railway & Power Company from Frank Jay Gould will eventually acquire the Newport News & Hampton property. Stone & Webster, Inc., who headed the syndicate which took over the Gould holdings in Virginia Railway & Power, have denied that they were negotiating for the other property.

Rerouting and Weekly Pass Under Discussion in Baltimore

Robert M. Feustel, public utilities expert, was the principal witness in the recent hearing before the Maryland Public Service Commission to determine the valuation of the properties of the United Railways & Electric Company, Baltimore. Mr. Feustel was called by Clarence W. Miles, people's counsel.

During his testimony the witness placed a value of $60,577,150 on the company's property and placed the reproduction cost of physical properties at $66,577,888. In the testimony presented earlier in the hearing by the United the reproduction cost, including going value and easements, was placed at approximately $114,000,000. Without going value and easements the United claim was about $80,000,000. Mr. Feustel said that the depreciation of the properties was about 24.61 per cent. He found the company's equipment in very good condition.

During his testimony Mr. Feustel also discussed the weekly pass, a subject which was brought before the commission by Mr. Miles when he filed a petition asking that the company be ordered to show cause why it should not put this system into operation. Mr. Feustel suggested that the plan be tried by the company, charging not less than $1.10 or more than $1.25 for the weekly ticket. However, it is not likely that this commission will take up this subject until the valuation of the property is determined.

The question of rerouting also was brought up. A survey of the city with this in view was termed advisable by H. Carl Wolf, chief engineer of the commission. Rerouting was urged by Mr. Miles, who claimed that considerable money could be saved.

Following the discussion of rerouting before the commission, C. D. Emmons, president of the United, issued a state-

ment in which he said that the company's staff of traffic experts was ready at any time to co-operate with the Public Service Commission and representatives of the city in making a study of a comprehensive rerouting plan for the city. He said he believed this could be done by the representatives of the three interests named.

$51,794 Net Earned by Indiana Interurban

Passenger and freight receipts of the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., during the year 1924 have been greatly reduced on account of bus and motor truck competition. This statement is made in the annual report of the company for the year ended Dec. 31, 1924, presented at the annual meeting of the stockholders on June 10. The income account follows:

INCOME ACCOUNT OF TERRE HAUTE, INDIANAPOLIS & EASTERN TRACTION COMPANY FOR YEAR ENDED DEC. 31, 1924

Gross earnings from operation		$4,995,417
Operating expenses		3,796,335
Net earnings		$1,199,082
Taxes		244,167
Earnings from operation, less operating expenses and taxes		$954,915
Other income:		
Dividends on stocks owned	139,799	
Interest, etc	40,295	
Sale of power, West Tenth Street power plant	157,409	337,504
Earnings from all sources, less operating expenses and taxes		$1,292,419
Deductions and rentals:		
Bond interest	$721,590	
Dividend rental	227,500	
Interest on notes, car trusts, etc.	61,409	
Brazil Electric Company rental	5,000	
Maintenance of organization, leased lines	3,000	1,018,500
Surplus		$273,919
Sinking fund		222,124
Balance		$51,794

MISCELLANEOUS STATISTICS OF THE TERRE HAUTE, INDIANAPOLIS & EASTERN TRACTION COMPANY FOR THE YEAR ENDED DEC. 31, 1924

Passengers carried—interurban lines	5,570,456
Passengers carried—city lines	19,063,750
Total passengers carried	24,634,206
Freight handled (tons)	171,183
Express handled (tons)	10,621
Car-miles operated—interurban lines	6,753,690
Car-miles operated—city lines	3,359,578
Coal consumed at power stations (tons)	275,751
Power generated, main power stations, kilowatt-hours	160,235,801

The freight earnings for 1924 were $609,459.64, as compared with $651,235.45 in 1923. There was a total of 171,183 tons, including car load shipments as follows:

	Car Loads
Livestock	6,273
Gravel	2,134
Cement	526
Coal	96
Miscellaneous	238
Total	9,267

MAINTENANCE

	1924	1923
Maintenance of way and structure	$706,501	$738,071
Maintenance of equipment	304,558	317,064
Maintenance of power plant, buildings and equipment	135,032	123,766
Total railway maintenance	$1,146,091	$1,178,902
Maintenance of light and power	235,165	228,073
Total maintenance	$1,381,257	$1,406,976

Mayor Suggests Purchase of P. R. T. Rented Lines

In a message to the City Council of Philadelphia, on July 2, Mayor Kendrick suggested the purchase by the city of the underlying companies of the Philadelphia Rapid Transit Company as a solution for the simplification of the corporate and financial structure, and as a way of reducing fixed charges through the lower interest rates applicable to city debts. He suggested an operating contract between the city and the Philadelphia Rapid Transit Company or some other company for a term of years upon an annual rental sufficient to meet the fixed interest charges upon bonds issued in exchange by the city to the present holders of traction stocks and bonds, all of which would mature in 50 years. He said the city would then become the absolute owner of an unencumbered street railway system.

He declared that the problem was an immediate one, because of the city's intention to have the Broad Street subway between Olney Avenue and City Hall in operation on a two-track basis during 1927. According to the Mayor, the Philadelphia Rapid Transit Company has announced its willingness to operate the Broad Street subway in conjunction with its other lines, but has called attention to the losses which will be entailed in the initial operation.

The construction program for the high-speed lines, the Mayor said, would require of the city an initial annual carrying charge of approximately $5,200,000, increasing to about $8,300,000 as the work is completed. A plan for the absorption of these losses and added carrying charges must also be evolved, so that added burdens upon the car-rider or taxpayer might be reduced to a minimum.

$7,000,000 Refunding Operation

Harris, Forbes & Company and the National City Company, New York, are offering $8,500,000 of 5½ per cent secured gold notes, due 1930, of the Toledo Traction, Light & Power Company, Toledo, Ohio. The issue is priced at 99 and interest. The proceeds will be used to retire approximately $7,000,000 existing funded debt, maturing Aug. 1, 1925, and for other corporate purposes. As the present funded debt bears interest at rates higher than 5½ per cent, the new financing will only slightly increase the annual interest charges.

The bonds will be specially secured by pledge under a trust indenture of $13,500,000 par value common stock of the Toledo Edison Company, $6,945,000 first mortgage 6 per cent bonds of the Community Traction Company, and the entire funded debt and all the capital stock (except directors' qualifying shares) of the Citizens Light & Power Company.

Conclusion of Manchester Deal Reported

Reports from Boston indicate that the stock necessary to assure transfer of control of the Manchester Traction, Light & Power Company, Manchester, N. H., to the Middle West Utilities Company has been received.

The basis of the offer was $150 a share for the $4,958,300 outstanding capital stock of the Manchester Company, the sale to be contingent upon the deposit of at least 55 per cent of the stock. Acceptance of the proposal was urged by the directors of the Manchester Company in a letter to stockholders signed by President E. C. Foster and George S. West, treasurer.

The Insull interests have lately acquired the Vermont Hydro-Electric Corporation, Rutland, Vt., and are seeking control of the Central Maine Power Company.

The Manchester company is one of the best known combination utilities in New England. Its total revenue in 1924 was $2,511,501, of which $739,973 came from railway operations. The company carried 9,202,085 revenue passengers last year.

Seeks to Foreclose Mortgage.—The Equitable Trust Company, New York, trustee for the bondholders, has filed suit at Anderson, Ind., to foreclose a mortgage on all the property of the Union Traction Company of Indiana made to secure a loan made in 1899 for "not to exceed $5,000,000."

Net Income Lower.—The Eastern Massachusetts Street Railway, Boston, Mass., reports a net income of $40,441 for the month of May. The net income for May, 1924, was $43,422. For the first five months of this year the net income was $349,262 and for the corresponding period in 1924 the net income was $351,128.

Property Sold.—The property of the Mauch Chunk & Lehighton Transit Company, Mauch Chunk, Pa., was sold on order of the Court of Common Pleas of Carbon County by the Mauch Chunk Trust Company, trustee, to Reuben J. Butz of Allentown and Mrs. Verna Wolff, president of the company, for $19,500, subject to the outstanding bonds. The president of the Eastern Pennsylvania Railways bid up to $19,000. The purchasers acted for the bondholders. The next step will be a reorganization of the company. The sale was made subject to the confirmation of the court. By permission of the Public Service Commission the line of the company from Flagstaff to and through Lehighton was abandoned some time ago.

Abandonment of Short Route Approved.—Stockholders of the New York & Queens County Railway, Long Island City, N. Y., have approved the abandonment of the Woodside-Corona and North Beach lines, as recommended by its directors. Gen. Lincoln C. Andrews, the receiver, has already applied to Supreme Court Justice Edward Riegelmann for permission to abandon the lines. Decision was withheld pending action by the stockholders. If the application is granted by the court, a similar application will then be made to the Transit Commission. The Corona surface line became practically useless with the construction of the elevated extension of the Queensboro subway to Corona. There has been little patronage of the North Beach line recently, but its abandonment will leave a considerable community without transit service.

Receiver Named.—Blaming buses and a general slump in mining for a depression that has caused heavy losses, the Cumberland & Westernport Electric Railway, Frostburg, Md., agreed recently to a receivership applied for by Ernest H. Johnson of Westfield, N. J., a $12,000 creditor. David B. Price, general manager of the company, which runs 25 miles through the Georges Creek mining region, was named receiver. Three mortgages, aggregating $655,000, stand against the company. The interest upon these issues has been paid by H. L. Doherty of New York, who, according to the bill, advanced $86,000 for the payment of interest and additional sums for operations. The Maryland Public Service Commission recently granted the company the right to operate buses.

Camp Line to Be Abandoned.—The Jacksonville Traction Company, Jacksonville, Fla., recently received permission of Federal Judge R. M. Call to abandon its 3½-mile line to Camp Johnston, constructed as a war-time project in 1918. Receiver Ingle had sought the approval of the Florida Railroad Commission, but that body refused to issue a ruling. Much of the rail and special work on the line is suitable for relaying purposes. Other equipment will be sold.

Book Reviews

Staatsspoor en Tramwegen in Nederlandsch-Indie, 1875-1925

Memorial album published by the Railway Authorities of Dutch East Indies at Bandoeng, Java. 217 pages. Illustrated.

This is a memorial album published to commemorate 50 years of railway operation in Java under government operation begun in 1875, after a private enterprise had become discouraged. The album is beautifully printed and illustrated. The views show interesting engineering installations, including the latest electrical equipment and portraits of officials connected with the railway service during the past 50 years.

Electrification of the roads in Java was dictated by the fact that Java has no extensive coal deposit, while water power in abundance is available. Proposals to install electric power on certain routes were under consideration before the war, but gained an impetus at that time because, with the shortage of shipping, prices for coal in the Dutch East Indies doubled and tripled. The successful results on the Chicago, Milwaukee & St. Paul Railway also encouraged electrical development. In consequence, two hydro-electric stations were planned to distribute at 70,000 volts, with 1,500 volts direct current on the railway working conductor. Adverse financial conditions necessitated the limiting of the construction to only one hydro-electric station with two substations, one of which was completed in September, 1924, and the second in January, 1925. With the completion of the first electrified line, about 42 miles of track will have been adapted to electric power, with about 34 miles planned for early equipment.

Popular Ownership of Property

Its Newer Forms and Social Consequences. Edited by William L. Ransom and Parker T. Moon, 1925, New York. Proceedings of the Academy of Political Science, Vol. XI, No. 3, Columbia University. 198 pages.

A collection of 25 papers by specialists, discussing the facts and interpreting the trend of an important economic development. Here are the results of a frank inquiry under the disinterested auspices of the Academy of Political Science concerning the extent and character of the recent wide diffusion of ownership of the stock of public utilities, of great industrial corporations and public service enterprises. Albert H. Harris, vice-president and chairman of the finance committee of the New York Central Lines, tells how the railroads have had to widen the market for their securities in order to raise new money and have gone recently to the small investor instead of as formerly to rich men, banks, insurance companies and those easily accessible to them or their fiscal agents.

The up-to-date survey of the last seven years, 1918-1925, of Robert S. Binkerd, vice-chairman of the committee on public relations of the Eastern Railroads, covering certain industries, railroads, and public utilities, shows an increase of 2,500,000 stockholders in this brief period for a limited group of securities.

The role and effect of customer ownership in the creation of mutual understanding between the public utilities and the general public are presented by A. Emory Wishon, vice-president and general manager of the San Joaquin Light & Power Company and chairman of the customer ownership committee of the National Electric Light Association. Pierrepont B. Noyes, president of Oneida Community, points out how true co-operation and sharing in the larger profits of successful business have been secured for the small investor through stock ownership, and both points are illustrated in the development of ownership of the Bell System in the paper of F. L. Devereux, vice-president of Bell Telephone Securities Company.

These references indicate the tenor rather than the extent of the contributions to this volume.

Health Maintenance in Industry

By J. D. Hackett, consultant on labor relations; lecturer on labor and employment management, New York University; formerly manager medical department, Nichols Copper Company. 488 pages. A. W. Shaw Company, Chicago. Net $5.

This book shows what maladies cause absence and inefficiency and then proceeds to show how hygiene and sanitation, medicine, surgery, can be applied in order to reduce them. It tells how to install a first-aid room, or a medical department, how to secure a part-time or full-time physician and nurses, and what is expected of them. It tells how to prevent accidents, to cure and relieve injuries. It describes common ailments and how they may be avoided or reduced, how to control occupational diseases, to improve ventilation, lighting and heating. It shows the nature of fatigue and how it may be avoided. In short, it tells those who are responsible for management how to conduct a business in the way best calculated to create a healthy and happy labor force.

For firms, large and small, the author indicates a complete policy for decreasing the toll of accident, sickness and ill health. No fixed, unvarying plan is laid down, but each and every unit, each rule of health and sanitation is fully, carefully described, explained, and its value in the scheme of health maintenance determined. Consequently, each business manager can adopt just as much or little as his own business requires.

Portfolio of Public Utility Advertisements

Published by the Public Utilities Advertising Association, Dempster Murphy, secretary, 72 West Adams Street, Chicago, Ill. $5.

This association has just issued a portfolio of more than 200 public utility advertisements. It is one of the first books of its kind ever published and is a veritable storehouse of information for individuals and agencies who are interested in public service company advertising in all its aspects.

The advertisements reproduced were chosen from 1,500 specimens submitted to the publications committee. The ads cover public relations, customer ownership and merchandising activities.

Metallurgy of Aluminum and Aluminum Alloys

By Robert J. Anderson, B.Sc., Met. E., Consulting Metallurgical Engineer. First edition, 944 pp., cloth binding, 295 illustrations. Henry Carey Baird & Company, Inc., New York, N. Y. $10.

This is a practical treatise on the metallurgy of aluminum and its light alloys. It covers the subject from the mining of the ores to the fabrication of the metals, and describes the application and maintenance thereof. Considerable attention is given to the preparation of alloys for castings and the most approved methods for preparing the principal alloys are described. Melting practice for aluminum and its light alloys is also discussed on the basis of the author's investigation in the U. S. Bureau of Mines. There are chapters dealing with corrosion and on soldering and welding. These should be of particular interest to electric railway men. In the chapter dealing with corrosion, the behavior of aluminum and aluminum alloys when in contact with the various corrosive agents is discussed. Mthods for protection against corrosion are given.

Street Traffic Control

By Miller McClintock, assistant professor of municipal government, University of California, Southern Branch, and consultant to the Los Angeles Traffic Commission. Published by McGraw-Hill Book Company. 233 pages. $3.

This book analyzes the causes of existing street traffic difficulties, summarizes the experience of the larger American cities and presents the conclusions of the foremost practical street traffic experts.

Personal Items

North Shore's New Manager

Official of High-Speed Interurban Has Served Road in Many Capacities

Jesse S. Hyatt, until recently engineer of maintenance of way of the Chicago, North Shore & Milwaukee Railroad, was made general manager and chief engineer of that railroad at a recent board of directors' meeting. The office was created for Mr. Hyatt.

Mr. Hyatt began work with the North Shore Line in 1903 as a rodman during the construction of one portion of the road. He had graduated from Hillsdale College in Michigan, later taking post-graduate work in engineering at the University of Vermont.

J. S. Hyatt

When he left the North Shore Line in 1904 he was an instrument man. He took the position of resident engineer with the Grand Trunk Railroad, in charge of work on the Pacific Coast extension, but returned to the North Shore line in 1905 as assistant engineer, in which position he continued until 1910.

A partnership with Frank Windes, municipal engineer, was then formed by Mr. Hyatt, he having charge of laying out various railroads from 1910 to 1912 in southern Illinois, Iowa and the territory around Chicago. He also served during this period as secretary and treasurer of the Lake County Telephone Company.

He returned to the North Shore again in 1912 and was made engineer of maintenance of way. This position he has held until the present time.

During his service with the North Shore line he has made special advances in the paving of highway crossings and in track drainage. He also had charge of the company's educational program among employees. The success of this effort has resulted in much favorable comment within the industry and attracted much attention locally in the territory served by the company.

Mr. Hyatt has served on the way and educational committees of the American Electric Railway Association. He is at present Mayor of Libertyville, Ill., which office he has held for a number of terms.

Promotions for Many Stone & Webster Men

Luke C. Bradley President of Virginia Properties—W. E. Wood in Charge of Operations

Stone & Webster, Inc., Boston, Mass., announce the following changes in managing executives of companies under their executive management:

William E. Wood, formerly manager of the Houston Electric Company and Galveston-Houston Electric Railway, has been elected vice-president of the Virginia Railway & Power Company in charge of operations.

J. F. McLaughlin, formerly manager of Baton Rouge Electric Company, has been elected vice-president of the Virginia Railway & Power Company in charge of new business.

Jefferson L. Alexander, formerly manager of the Haverhill Gas Light Company, has been appointed manager of the Houston Electric Company and Galveston-Houston Electric Railway.

Walter H. Burke, formerly manager of the Houghton County Electric Light Company and Houghton County Traction Company, has been appointed manager of the Northern Texas Traction Company and Tarrant County Traction Company.

J. Alves Dixon, formerly general superintendent of railways of the El Paso Electric Company, has been appointed manager of Baton Rouge Electric Company.

Stone & Webster, Inc., also announce the following changes in their executive personnel:

A. Stuart Pratt and C. F. W. Wetterer have been appointed general executives of the operating division. They have full charge of that division, including operating division departments in the Boston office.

Harry T. Edgar, division manager, has taken charge of the Northern New England and Cape Breton properties in addition to the Middle West, Southern New England and Insular properties which have been under his charge for some time. The two New England districts are to be combined.

Luke C. Bradley has been appointed division manager and has taken charge of the Virginia properties as president thereof with headquarters at Richmond. Southwestern district matters will be handled by the district office directly with Boston.

Donald C. Barnes has been appointed division manager of the Southeastern properties and the Sierra Pacific Electric Company. He will continue his present position in connection with the Northwestern properties.

Marcy L. Sperry, in addition to the Southern New England and Insular companies, which he has been handling as district manager for some time, has taken over the properties of the Northern New England district and Cape Breton.

George H. Clifford has been appointed district manager in charge of the Southwestern district.

Other changes affecting Messrs. Bradley and Clifford were referred to in the ELECTRIC RAILWAY JOURNAL for June 6, but the announcement just made adds to the significance of the promotions.

V. E. Thelin New Purchasing Agent in Chicago

Victor E. Thelin has been appointed purchasing agent of the Chicago Surface Lines, Chicago, Ill., succeeding F. C. Evans, resigned.

Mr. Thelin's first connection with the street car companies in Chicago started in 1907, when he entered the service of the Chicago City Railway under

V. E. Thelin

H. B. Fleming, chief engineer, where he acted as testing engineer in charge of miscellaneous testing and power statistics. In 1911 he was transferred to headquarters, working directly under the chief engineer. With the unification of all the surface lines companies in 1914, he was transferred to the electrical department as engineer of tests in charge of testing and power statistics, as well as telephone engineering. He continued at that work until his recent appointment to the purchasing department.

Mr. Thelin is also known as the inventor of a simplified type of full automatic substation, which he installed in 1918 for the Hammond, Whiting & East Chicago Company.

Mr. Thelin was born in Chicago in 1885 and after a course in manual training at high school, he took four years of study in engineering at the Lewis Institute of Technology from 1904 to 1908. During these years he also worked for the Chicago Edison Company and the Commonwealth Electric Company, spending part time at drafting, also at underground and overhead work and in the substation operating department.

He is a member of the American Institute of Electrical Engineers and of the Western Society of Engineers.

New Utility Department on Chicago Surface Lines

A new utility department has been established under Chief Engineer Harvey B. Fleming of the Chicago Surface Lines, to succeed the department of stables, wreck wagons and supply cars. This new department will have charge of the operation and maintenance of all automobiles and the operation of all work cars, supply cars and other utility cars. The order, which carries with it a plan for placing the equipment on a completely motorized basis, announced the following appointments for the department's staff, effective July 1: Thomas Blakely, superintendent; David A. Robinson and Walter C. Becker, assistant superintendents.

Mr. Blakely has been in Chicago transportation service for about 35 years. In 1890 he was a tow boy for the Chicago City Railway and during the next six years he was a general utility man around the barns at Twentieth and Dearborn Streets. In 1896 he was appointed superintendent of the Archer Avenue depot under the transportation department and had charge of several other stations until a serious illness interrupted his service for a time. In 1908, at the start of the rehabilitation period, he was appointed superintendent of stables, wreck wagons and supply cars. He continued in that position after the unification of the several companies and up to the time of the establishment of the new department.

Mr. Robinson's connection with the local properties dates back about 50 years when he was a tow boy for the West Division Street Railway. He was out of service for about seven years, but remained at the work continuously after 1886, when he became a horse car driver. After serving on cable and electric cars, he was appointed foreman at the Division Street depot in 1901. In 1904 he was appointed inspector in the transportation department of the Chicago Union Traction Company and continued there until he was made Mr. Blakely's assistant in 1914.

Mr. Becker learned the machinist's trade before going to the University of Illinois in 1906. After three years' study there in the course of electrical engineering, he entered the service of the Chicago City Railway under the late A. A. Thurlby, superintendent of wires and cables. Three years later he was named as assistant to Mr. Thurlby. After unification of the properties in 1914 he was transferred to the electrical department, where he was employed for six years as assistant superintendent of line transmission. In 1920 he was placed in charge of automobiles and other vehicles in that department, and within two years all horses in his care had been disposed of and the department completely motorized. This training made Mr. Becker the logical choice to take charge of automotive equipment in the new department.

The principal effect of the order, aside from putting all modern vehicles in the company's utility service, will be to merge all such service under Chief Engineer Fleming. Mr. Becker was formerly in the electrical department of the company.

Several of the old carhouses will be converted into garages.

E. J. Burns Leaves San Diego

Assistant General Manager of San Diego Electric Railway Relinquishes that Post

Edward J. Burns has resigned as assistant general manager of the San Diego Electric Railway, San Diego, Cal. Mr. Burns may come East, but that has not been definitely decided. It was he and the present owner-manager of the property, Claus Spreckels, who rehabilitated the road following the troublesome war-time period, and the results of that program having been realized to the fullest extent. Mr. Burns prefers to keep his talents employed in work similar to that which he did at San Diego in co-operation with Mr. Spreckels rather than to devote himself almost solely to administration duties.

So well have he and Mr. Spreckels worked together—and it is difficult to draw the line of demarcation of credit between them—that the gross corporate income for 1924 was $220,355, compared with $167,223 for 1923. To achieve this showing the owner of the property and his assistant turned to their advantage every transportation tool. In consequence San Diego, Cal., more than any other city, perhaps, affords a cross-section view of most of the things that have made for the rehabilitation of the electric railways.

San Diego was the first street railway on the coast to use the bus. That move required great courage. Messrs. Spreckels and Burns had it. They tried train operation, they put on the weekly pass for regular two-zone riders, they went before the public and got a modification of their franchise exempting them from paving and other expenses, they built the new La Jolla line to the beach at a cost of $2,000,000. A satisfied public has responded with a full measure of patronage and appreciation. Meanwhile the employee was not forgotten. Relations between the management and its men were cemented more firmly. In all of this work each of the two men did his part.

Ed Burns, who again turns his face toward the rising sun, started his career at the age of fourteen as call boy on a steam railroad, went through the shops and other mechanical departments and then entered electric railway work with the Utah Light & Railroad Company, Salt Lake City. From that company he went to the Key route at Oakland, Cal. Next he entered the bureau of finance with the California Railroad Commission. It appears almost as if he alternated between steam and electric railway work, for next he entered the service of the San Diego & Southeastern Railway, a steam line, as manager. This was later absorbed by the San Diego & Arizona Railway. There it was that he first attracted the attention of the Spreckels interests, who were identified with that line. From 1918 to 1920 he was engaged chiefly in electric railway rate cases. That was just the touch needed to round out his transportation experience. This aroused his desire to test and to try. The longing was soon satisfied.

Mr. Burns found Claus Spreckels, his new associate on the San Diego Electric Railway, at all times an eager listener, at once ready to back with all the Spreckels resources any plan that Mr. Spreckels was convinced had for its ultimate goal the elements that took into consideration the general welfare of the public, the personnel of the railway and the company itself. The two men working together have formed an exceedingly strong combination. It detracts from neither one to praise the other. To this the results testify.

Frank Schmitt Made Master Mechanic at Evansville, Ind.

Frank Schmitt, who has been an employee of the Southern Indiana Gas & Electric Company, Evansville, Ind., for more than seventeen years, was recently appointed master mechanic to succeed A. Newhouse, deceased. Mr. Schmitt started work for the company in its power house. He was next made night foreman at the carhouse and served in that capacity from 1910 to 1913. He then went into the shops as electrician. There he remained until 1918. He was promoted from this post to be general shop foreman and was in turn advanced to master mechanic.

Mr. Coates Heads Toledo Traction

Frank R. Coates, personal representative of Henry L. Doherty, has been elected president of the Community Traction Company, Toledo, Ohio. He succeeds B. C. Adams, former president, who is now in Kansas City under a plan of reassignment of Doherty operating officials reviewed at length in the ELECTRIC RAILWAY JOURNAL for April 4, page 566.

J. Frank Johnson has been named vice-president and general manager, and H. R. Roudebush, who is secretary and treasurer, has been elected a director to replace B. C. Adams, resigned.

G. A. Probst, for the past seventeen years affiliated with the Warren-Jamestown Street Railway, Warren, Pa., has been appointed superintendent of the electric railway and the power plants of the Niagara, Lockport & Ontario Power Company, in the smaller towns between Warren, Pa., and Jamestown, N. Y. The railway was recently acquired by the power company.

F. H. Warner, who has been superintendent of the Richmond division of the Terre Haute, Indianapolis & Eastern Traction Company for a number of years, has been advanced to the position of general supervisor of agents. Mr. Warner will make his main headquarters at Greenfield, Ind. Marvin Fletcher, chief dispatcher, has been named to succeed Mr. Warner.

J. V. Long has resigned as advertising manager of the Philadelphia Company, Pittsburgh, Pa., and affiliated corporations, including the Pittsburgh Railways, to engage in general advertising and advertising contultant work.

Obituary

John Young

John Young, the first general manager of Glasgow Corporation Tramways, died recently. Mr. Young was born at Fulwood, Renfrewshire, on June 13, 1845. He was educated at Paisley grammar school. At the age of 30 he entered the service of the Glasgow Corporation and was the first organizer and general manager of the city tramways. After seven years of horse traction, the accumulated reserve and sinking funds were enough to cover the cost of conversion to electricity, and after sixteen years of electric traction the accumulated funds sufficed to wipe off the whole capital expenditure. In 1902-3 he was the first president of the Municipal Tramways Association of Great Britain. Mr. Young had declined various appointments, including that of chief tramways officer to the London City Council, and had resolved to retire to the country, when in 1904 he was persuaded by Mr. Yerkes, chairman of the Underground Electric Railways, London, to become his assistant and general manager of the Metropolitan District Railway. It was under Mr. Young's superintendence that the operation of the District in 1905, and the associated tube system in 1906, by electric traction was successfully started. Some little time after Mr. Yerkes's death he retired from managership and became a director. In 1910 he carried out his deferred purpose of retiring.

Robert S. Goff, for many years prominent in electric railway circles in New England, died recently in Fall River, Mass. In 1882 Mr. Goff became identified with the Globe Street Railway, Fall River, as bookkeeper. Several years later he was made treasurer of the company. When that company was consolidated with the Old Colony Street Railway, Mr. Goff was promoted to the managership of the Taunton division. Later he became general manager of the company's combined lines. In 1903 Mr. Goff was elected vice-president and general manager of the Bay State Street Railway, organized to combine practically every electric railway in suburban cities north and south of Boston. Some time ago this company was succeeded by the Eastern Massachusetts Street Railway. On July 1, 1920, Mr. Goff resigned to retire to private life. He was born 65 years ago in Fall River.

Thomas Kinsella, former superintendent of the Lockport division of the International Railway, Buffalo, N. Y., died recently. Mr. Kinsella was associated with the traction company for eighteen years. He was 50 years old.

Henry C. Ebert, former president of the Cincinnati Car Company, Cincinnati, Ohio, died recently. Mr. Ebert resigned his position as president of the car company in 1914 because of ill health. He was associated with the Westinghouse Electric & Manufacturing Company in Pittsburgh for many years and in 1907 became president of the Cincinnati Car Company. He was born in Zanesville, Ohio, in 1866.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Motor Merger Details

General Motors Will Control Yellow—New Coach and Truck Unit Will Result

Details covering the negotiations whereby the General Motors Corporation has acquired a controlling interest in the Yellow Cab Manufacturing Company, Chicago, were made public on July 8 by representatives of both companies. Under the agreement the truck division of the General Motors organization will be transferred to the Yellow Cab Corporation, and in exchange the General Motors Corporation receives 800,000 shares of the common stock, a controlling interest in the Chicago organization. The plan has to be ratified by the stockholders of the Yellow Cab Manufacturing Company.

A statement by Alfred P. Sloan, Jr., president of the General Motors Corporation, said:

> The Yellow Cab Manufacturing Company, apart from its position in the taxicab business, occupies a strong position in the bus field. A merger of the General Motors truck business with the business of that company is calculated to result in material economies in the manufacturing end and distribution end of these important lines of business.
>
> General Motors Corporation has recognized the importance of the bus, and believes that the proposed merger with the Yellow Cab Manufacturing Company will immediately place it in a strong position in the bus business, with the opportunity of enjoying a really unique position in the future development in that field. It also believes that its position in the heavy-duty truck business will be greatly strengthened as a consequence of the combined management and the benefits derived from more economical manufacture and distribution.

From the standpoint of the stockholders of the Yellow Cab Manufacturing Company, John A. Hertz, of that organization, said this deal is "the greatest achievement in their history." His statement said:

> For a long time the Yellow Cab Manufacturing Company has been preparing to engage vigorously in the manufacture of trucks and commercial bodies, in addition to its established lines of motor buses, taxicabs and its present products. The acquisition of the General Motors facilities will immediately enable it to become a leading factor in the truck business and will secure to it at once the excellent facilities and the vast resources connected with the General Motors Corporation, a result which otherwise could not possibly have been accomplished without many years of effort.

Out of the negotiations will come a new company, the Yellow Truck & Coach Manufacturing Company, with a capitalization consisting of 150,000 shares of 7 per cent non-voting cumulative preferred stock of $100 a share par value, 600,000 shares of Class B stock of $10 a share par value, and 800,000 shares of common stock of $10 a share par value.

It is said that the truck division of General Motors will be taken over by the Yellow company as of April 30.

John Hertz becomes chairman of the board of directors of the new corporation and John A. Ritchie, head of the Chicago Motor Coach Company, president of the merged corporation. Mr. Hertz will continue as president of the Yellow Cab Company and chairman of the board of the Omnibus Corporation which owns the Chicago Motor Coach Company. The operating companies are not affected by the truck and coach company merger, and a change in operating control of those organizations is not contemplated.

The directors of the new company are: John Hertz, chairman; Irving B. Babcock, Donaldson Brown, Edward N. D'Ancona, P. L. Emmerson, Harold E. Foreman, John L. Pratt, Leonard S. Florsheim, F. J. Fisher, Paul H. Geyser, George A. Green, Pierre Du Pont, Robert Lehman, Otto W. Lehman, Charles A. McCulloch, John J. Raskob, John A. Ritchie. A. P. Sloan, Jr., Ott E. Stoll, A. R. Swayne, John R. Thompson and William Wrigley, Jr.

Helpful Advice for Trade Associations at Washington

Reports have been confusing as to the attitude the Department of Justice would assume toward officials of trade associations seeking departmental advice on the legality of various activities. It can now be stated that while the department cannot invade the private legal field, it desires to be helpful in the avoidance of litigation. To this end it will engage in conference and may indicate some specific things an association cannot do. There will not, however, be any agreements in advance on the legality of contemplated activities nor, an association once having engaged in questionable practices, will the department stay prosecution upon an engagement by the defendant "to be of good character thereafter."

Ohio Brass Business Satisfactory

An unusual record of achievement in the manufacturing field is indicated in a recent banking circular offering Class B common stock of the Ohio Brass Company, Mansfield, Ohio. The company has paid dividends on its common stock for 21 of the past 23 years and without interruption during the last thirteen years. The consolidated balance sheet as of Dec. 31, 1924, shows the company to be in a very strong financial condition with current assets of more than nine times current liabilities. Net earnings after full depreciation, federal taxes and preferred dividends for the three years ended Dec. 31, 1924, were: 1922, $1,272,863; 1923, $1,785,236; 1924, $2,556,487.

The company has proposed to declare a stock dividend of two shares of no par common stock on each share now outstanding. Average annual net earnings for the period given above were $1,871,-

$2.29 or $6.49 per share of the company's $10 par common stock to be outstanding. For the year 1924 such earnings were $8.86 per share. Estimated net earnings for the current year equal or exceed those for 1924.

The Ohio Brass Company was established in 1888 at Mansfield, Ohio, with a capital of $5,000. It is one of the world's largest manufacturers of high-tension insulators, electrical equipment and brass valves for steam, gas and water. Its plants occupy 109 acres of land and contain 21 acres of floor space. Approximately 85 per cent of the company's output is sold to users of electric power.

$7,000,000 Car Order Placed by Pennsylvania

Both the J. G. Brill Company and the St. Louis Car Company participate in the order announced on July 7 as having been placed by the Pennsylvania Railroad for 367 passenger cars, involving an expenditure of approximately $7,000,000. The order was distributed as follows: 137 cars to the American Car & Foundry Company, 90 to the Pressed Steel Car Company, 35 to Pullman Car & Manufacturing Company, 70 to Standard Steel Car Company and the remaining 35 divided among J. G. Brill, St. Louis Car and Bethlehem Steel Corporation. The equipment consists of 115 passenger coaches, fifteen combination passenger and baggage coaches, five combination passenger and baggage-mail cars, ten combination baggage and mail cars and 222 baggage cars.

Westinghouse Reports Increased Business

The quarter ended June 30 yielded incoming orders to the Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., substantially in excess of the previous three months and also ahead of the corresponding period a year ago. It is estimated that bookings for the past three months will run between $40,000,000 and $45,000,000, and may top the latter figure. Such an outcome would compare with $35,834,000 actual orders received in the March 31 quarter, which was the final of the 1924-1925 fiscal year, and $40,300,000 in the same period last year.

On the whole, expectations are that Westinghouse Electric will enjoy a normal inflow of business during the present fiscal year, with indications that earnings will run ahead of the $15,324,364 net income, equal to $6.46 a share on the $118,503,150 combined preferred and common stock outstanding, earned last year.

Tire Prices Lag Behind Crude Cost

Bus tire prices have been increased about a third in the past three months, but manufacturers have not been compensated for the 450 per cent rise in crude rubber prices. Those companies which had not covered themselves by buying for future delivery at low prices are curtailing production while waiting for lower prices.

Increased use of reclaimed rubber stands out as the biggest single factor likely to reduce the price of crude rubber. About one-quarter as much reclaimed as crude rubber has been consumed during the past four years of low prices, but with improved processes now available, this ratio is susceptible of being increased to 50 per cent. Other factors which will tend to lower the price for crude rubber include cultivation on American soil, restricted output of tires and tubes, and increased Dutch production.

It is unlikely that tire prices will ever line up to the ratio between the crude rubber prices and customer prices of 1920, because of intense competition and customer resistance to price increases.

Babbitt Metal Consumption for Five Months

The Department of Commerce announces total apparent consumption of babbitt metal, based on reports received from 27 firms, as 5,081,667 lb. in May, as compared with 5,126,415 in April. This consumption is calculated from sales by manufacture and consumption by those firms (among them several important railroad systems) which consume their own production. The sales of babbitt metal in pounds are given separately from the consumption in the producing plants. The table follows:

1925	Total Apparent Consumption, Pounds	Sales (by Manufacturers) Pounds	Consumption (by Producers) Pounds
January....	5,683,182	4,620,814	1,062,368
February...	5,164,619	4,103,340	1,061,279
March.....	5,644,288	4,395,901	1,248,387
April.....	5,126,415	3,928,135	1,198,280
May.....	5,081,667	4,189,557	892,110
Total five months...	26,700,171	21,237,747	5,462,424

Copper Stocks Low

Copper stocks on July 1, 1925, in the hands of North and South American producers, are estimated to have been approximately 170,000,000 lb., a reduction of about 75,000,000 lb. from the 244,696,000 lb. on hand April 1. This is the lowest supply of refined copper in the hands of American producers at the end of any quarter since the war. It compares with a previous low of 197,690,000 lb. on July 1, 1923.

Metal, Coal and Material Prices

Metals—New York	July 7, 1925
Copper, electrolytic, cents per lb	14.00
Copper wire base, cents per lb	15.50
Lead, cents per lb	8.075
Zinc, cents per lb	7.50
Tin, Straits, cents per lb	57.625
Bituminous Coal f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$4.225
Somerset mine run, Boston, net tons	1.925
Pittsburgh mine run, Pittsburgh, net tons	1.95
Franklin, Ill., screenings, Chicago, net tons	2.00
Central, Ill., screenings, Chicago, net tons	1.775
Kansas screenings, Kansas City, net tons	2.50
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft	$6.35
Weatherproof wire base, N.Y., cents per lb.	18.00
Cement, Chicago net prices, without bags	2.40
Linseed oil (5-bbl. lots), N.Y., per gal	$0.98
White lead in oil (100-lb. keg), N.Y., cents per lb	0.1525
Turpentine (bbl. lots), N. Y., per gal	$1.01

General Electric Doing Well

Production has been maintained by the General Electric Company, Schenectady, N. Y., at a satisfactory level thus far in 1925, with output for the first half estimated as about corresponding in volume with incoming orders. Unfilled orders have varied only slightly the past few months, and at present are estimated at about $70,000,000, against actual unfilled business worth $68,958,000 at the close of 1924.

It is estimated the company will show incoming orders for the second quarter of about $75,000,000. This compares with actual orders of $83,846,236 in the first quarter and $71,219,984 in the corresponding period last year. In the first six months of 1924 the company produced $144,707,887 new business, while the total for the 1923 period reached $164,259,755. Estimated reduction in new orders of about 14 per cent from the first three months represents primarily the seasonal fluctuation in the industry, although the rather general lull in business developments in recent months is also a factor.

Farmers Want Manufacturers to Pay More Freight

An increase in the freight rates on manufactured articles and a reduction in those applicable to agricultural products is advocated by the National Grange in a brief filed with the Interstate Commerce Commission in connection with the Hoch-Smith resolution. The Grange contends that freight charges on farm products average $4.50 a ton, while manufactured products are assessed only $2 a ton. Agriculture moves only half its products by rail, yet it spends 6 per cent of its income for freight, the Grange figures. Manufacturers move 90 per cent of their output by rail, but pay only 2 per cent of their income for freight, it is said.

Rolling Stock

New Orleans Public Service, Inc., New Orleans, La., will spend $90,000 during the year for buses to be used in partly developed territory. For rebuilding passenger coaches $84,000 will be spent. The expenditure for other rolling stock equipment is estimated at $90,000.

Union Traction Company of Indiana, Anderson, Ind., through Receiver Arthur W. Brady, has asked permission of the Circuit Court at Anderson, Ind., to purchase fifteen steel interurban passenger cars on a lease or conditional sale basis at a cost of $407,000. Approximately 20 per cent of the amount would be paid in cash and the remainder would be paid in twenty payments quarterly, with 6 per cent interest from Aug. 1, this year. There will be a hearing on the petition on July 16.

Seattle, Wash.—The City Council utilities committee has under consideration an ordinance authorizing a bond issue of $2,000,000 to provide funds to purchase additional equipment for the Seattle Municipal Railway. It is proposed to buy 120 new cars, with low

floors, double trucks, both center and end exits and entrances. The cars will be equipped for either one-man or two-man operation. Each will seat 58 passengers.

Interstate Street Railway, Attleboro, Mass., has announced specifications on new equipment referred to in ELECTRIC RAILWAY JOURNAL, issue of Feb. 14, 1925, page 282. The details of the five double-truck cars are as follows:

Builder of car body	Wason Manufacturing Company
Type of car	Double truck, safety
Seating capacity	44
Weights:	
Car body and all equipment complete	17,650 lb.
Trucks and motors	13,600 lb.
Total	31,250 lb.
Bolster centers, length	20 ft. 0 in.
Length over all	40 ft. 3 in.
Truck wheelbase	5 ft. 4 in.
Width over all	8 ft. 2⅝ in.
Height, rail to trolley base	10 ft. 5⅛ in.
Body	Semi-steel
Interior trim	Cherry
Headlining	Carline and roofboard white enamel
Roof	Arch
Air brakes	Westinghouse Electric straight air brake, equipped with passenger emergency control
Armature bearings	Sleeve
Axles	A.S.T.M. A-20-16 annealed
Bumpers	Channel
Car signal system	Faraday high voltage
Car trimmings	Bronze, statuary finish
Center and side bearings	Brill
Control	Double end K type
Curtain fixtures	Curtain Supply Company Rex all metal
Curtain material	Pantasote K-2
Destination signs	Hunter No. 15 L. B. drive
Door-operating mechanism	Manual
Energy-saving device	Arthur recorders
Fare boxes	Johnson DM3
Fenders	H. B. Life Guard
Gears and pinions	Solid
Hand brakes	Brill vertical, geared
Heater equipment	Consolidated Car Heating Company
Headlights	12-in. Golden Glow
Journal bearings	3¼ in. x 6 in.
Journal boxes	Brill
Lightning arresters	General Electric
Motors	Four GE-264, inside hung
Sanders	Ohio Brass
Sash fixtures	J. L. Howard
Seats	Brill Winner, reversible
Seating material	Dark gray plush
Springs	Brill graduated
Step treads	Kass safety
Track scrapers	Wason, air operated
Trolley catchers	Ohio Brass
Trolley base	General Electric
Trucks	Brill 77-E-X
Ventilators	Brill exhaust
Wheels	26-in. rolled steel

Details of the three single-truck cars follow:

Builder of car body	Wason Manufacturing Company
Type of car	Single truck, double end, Birney safety
Seating capacity	33
Weights:	
Car body	6,800 lb.
Trucks	4,400 lb.
Equipment	4,907 lb.
Total	16,107 lb.
Length over all	28 ft. ¾ in.
Truck wheelbase	8 ft. 0 in.
Width over all	7 ft. 10⅝ in.
Height, rail to trolley base	10 ft. 8 in.
Body	Semi-steel
Interior trim	Cherry
Headlining	Carline and roofboard white enamel
Roof	Arch
Air brakes	Westinghouse straight air with passenger emergency control
Armature bearings	Sleeve
Axles	Hammered steel
Bumpers	Channel
Car signal system	Faraday high voltage
Car trimmings	Bronze, statuary finish
Center and side bearings	Brill
Control	Double-end K type
Curtain fixtures	Curtain Supply Company Rex all metal
Curtain material	Pantasote K-2
Destination signs	Hunter No. 15 L. B. drive
Door-operating mechanism	Manual
Energy-saving device	Arthur recorders
Fare boxes	Johnson DM-3
Gears and pinions	Solid
Hand brakes	Brill vertical, geared
Heater equipment	Consolidated Car Heating Co., 600-watt single-coil truss plank heaters
Headlights	12-in. Golden Glow
Journal boxes	Brill
Lighting arresters	General Electric
Motors	Two GE-264, inside hung
Paint	Enamel
Sanders	Ohio Brass
Sash fixtures	J. L. Howard
Seats	Brill "Waylo" reversible
Seating material	Birch slats
Slack adjuster	Brill automatic
Springs	Brill
Step treads	Kass safety
Track scrapers	Wason air operated
Trolley Base	U. S.
Trolley catchers	Ohio Brass
Trucks	Brill 79-E-1
Ventilators	Brill exhaust
Wheels	26-in. rolled steel

Miami Beach Electric Company, Miami Beach, Fla., has been authorized by the City Council to purchase fifteen additional cars.

Track and Line

Stockton Electric Railroad, Stockton, Cal., has applied for authority to construct a single or double-track street railroad from Central Avenue and Oxford Circle, to a point on the north line of Stadium Drive, approximately 2,815 ft.

Trenton & Mercer Traction Corporation, Trenton, N. J., has been granted permission by the Trenton Commission to construct a double track, switches and other special work at the site of the new terminal soon to be erected by the company.

New Orleans Public Service, Inc., New Orleans, La., following the approval by the Commission Council of its new $5,000,000 bond issue, made public an itemized budget of the expenditures of the corporation during 1925. This discloses that the construction program for the current year will reach a total expenditure of $6,641,203. The railway and track departments contemplate spending $1,705,296. This includes $254,390 for change of gage of some of the lines, $137,000 for changes incidental to abandonment of tracks and $907,000 for other track changes. The sum of $300,000 has been set apart for the new Rampart-St. Claude Street cut-off and $106,000 for the construction of a new bridge over the New Basin Canal at Carrollton Avenue.

Los Angeles Railway, Los Angeles, Cal., will spend approximately $205,000 as its share of the Macy Street Bridge construction and $30,000 as its assessment for the storm drain now being built on Moneta Avenue.

Power Houses, Shops and Buildings

Jamestown Street Railway, Jamestown, N. Y., has filed plans for the erection of a one-story brick and steel automatic substation in Quarry Road, to cost $20,000, with equipment.

Trenton & Mercer County Traction Corporation, Trenton, N. J., is having plans prepared for its new terminal on Perry Street.

Northern Texas Traction Company, Fort Worth, Texas, suffered a loss of from $20,000 to $40,000 recently when its transforming station at Arlington was partially destroyed by fire. The loss, it is reported, was covered by insurance.

Trade Notes

Uehling Instrument Company, Paterson, N. J., has appointed Charles M. Bullard, 912 Washington Street, Appleton, Wis., as its representative for central and northwestern Wisconsin, to handle the Apex CO_2 recorder and its other power plant instruments. Mr. Bullard has had a long and varied experience as a paper mill engineer.

Haskelite Manufacturing Corporation, Chicago, Ill., has prepared a blueprint booklet for distribution gratis to engineering departments of street railway and bus manufacturers and operators. This booklet describes and shows the application of Haskelite and Plymetl side panels, which in the average street car are claimed to save approximately 930 lb.

Duff Manufacturing Company, Pittsburgh, Pa., manufacturer of Duff and Barrett lifting jacks, has announced the appointment of two new vice-presidents, Charles N. Thulin and P. C. O'Hara. Mr. Thulin, during the last ten years as district manager, has represented the Duff Manufacturing Company in the Chicago district. His headquarters, as heretofore, will be in the Peoples Gas Building, Chicago. Mr. O'Hara for a number of years has been associated with the Galena-Signal Oil Company, first located in New York City and later as district manager at Cincinnati. His headquarters will be at 250 Park Avenue.

Consolidated Car Heating Company, Albany, N. Y., announces that R. J. Parsons has been appointed chief engineer. Mr. Parsons joined the engineering forces of the General Electric Company in 1906. He was stationed at Fort Wayne, Ind., for several years developing the Entz transmission, an early gas-electric car, after which he was transferred to the Erie Works to represent the engineering department. Twelve years ago he entered the railway equipment engineering department with offices at Schenectady.

New Advertising Literature

Shepard Electric Crane & Hoist Company, Montour Falls, N. Y., has issued Bulletin No. 80, a 40-page illustrated pamphlet covering the use of electric cranes and hoists in the iron and steel industry.

Protexol Corporation, New York, N. Y., successor to the Carbolineum Wood Preserving Company, has issued Bulletin No. 40. The subject of this pamphlet deals with the value of brush or open tank treatments to prevent the decay of timber when using "Protexol" wood preservative No. 1.

Wagner Electric Corporation, St. Louis, Mo., has issued a 27-page booklet called "Fifty Questions and Answers About Power Factor."

Conveyors Corporation of America, Chicago, Ill., has published a new booklet called "Finer and Better Coal-Handling Equipment." This booklet describes the American mono-rail cable conveyor, newly designed to handle coal from railroad cars to silos, bins, bunkers or ground storage.